UNIVERSITY OF OREGON

Department of Physics

Honors College Dean Position

Dear Search Committee,

The UO is my professional home. I care deeply about our faculty and students. I am determined to improve the university to maximize their successes. As I look forward to the final decade of my career, I feel that the first three decades were a warm-up for what is to come. I have enjoyed the challenges and rewards of leadership during my 8 years as Director of the Material Science Institute (MSI) and my subsequent 5 years as Head of the Physics Department. The Honors College (HC) Dean position would allow me to build on my interdisciplinary background and promote excellence more broadly across the university.

The past 3 years have been an unprecedented test for everyone at our university. Heading the Physics Department, I had to create a compelling vision for success and then translate that vision into action. My daily actions helped to shape those of 35 faculty, 4 staff, 130 graduate students, 150 majors, and several thousand undergraduates. This hard-working community became a motivated and energized team, driven by a collective belief that we would find a positive trajectory forward. They knew that I would work relentlessly for them to promote excellence. Although I had to make challenging decisions along the way, everyone trusted in my integrity and my ability to listen and respond to their concerns. The practicalities of the pandemic, endless budget crises, and social unrest make it tempting to judge recent times in terms of survival. Yet the Physics Department did much more than survive under my guidance – we thrived. The ratio of graduate students to faculty has increased, we reached an historic peak in annual PhD student throughout (25 recruitments and 23 Defenses), a whole year has been sliced off their average time to graduation, and enrollment of our majors has increased by over 20 percent. Naturally, I didn't advance the department on my own. My headship has been driven by my collaborative spirit. Within the department, I promoted talented people into influential positions and worked closely with those whose skills complemented my own. Beyond Physics, I worked with fellow Department Heads, the Deans, and the Provost's team to identify and solve problems often on a daily basis. Looking forward, I am confident that the above leadership qualities would to be a major asset to the HC faculty and students as we work together to advance its mission.

I would bring a natural passion to the HC Dean position. I have been passionate about the liberal arts since I was 10. Staring up at the Moon, I marveled at the scientists who had just landed a person on its surface. At the same time, I was in awe of those who could capture its beauty in their creative works. From that time on, I was determined to defeat divides between disciplines. This philosophy has served me well. I receive frequent invitations to talk about strategies to integrate the arts and sciences, including at the White House and for the Nobel Foundation. A student recently wrote to me: "It is not often that you meet someone who is capable of the kindness and generosity that you have shown me, a complete stranger. I must reiterate how much you have served as an inspiration to me, and many of my friends and colleagues who struggle to embrace their dual identity as scient(art)ists in this somewhat rigid scientific world we have chosen to be a part of. It is, as you have shown, possible to have both." I am very fortunate that my career demonstrates the remarkable value of the liberal arts. My current research serves as an example. My work on bionic eyes emerged from my studies of Jackson Pollock paintings. If I hadn't delved into the arts, my science wouldn't be on the verge of potentially restoring vision to over one million people.

I never had the chance to attend an honors college. My personal liberal arts education unfolded as I traversed disciplines through the years (I have degrees in both art and science, and have published research in art, architecture, biology, chemistry, design, environmental science, mathematics, neuroscience, physics, physiology, and psychology). This allowed me to think carefully about the liberal arts as a modern, practical concept rather than as an historic dream. A multi-disciplinary approach to a liberal arts education is not sufficient. It must be interdisciplinary. Accordingly, a university should be more than a set of isolated departments. Interaction is key. And interactions should be designed carefully to encourage practical and impactful synergies, whether they are scholarly, educational, administrative, or cultural. The spotlight of these principles fell on our university system several years ago when I served on the College Task Force. Although its focus was the College of Arts and Sciences, its relationship with the HC came up frequently. Successful integration occurs when we recognize the similarities and differences that exist across disciplines. Many are natural and healthy and should be celebrated by all Deans. But some differences are artificial and present

barriers that dampen our potential for excellence. During my Physics Headship, I complemented our regular faculty with 17 affiliated members from 5 neighboring departments (including the Knight Campus and the new School of Computer and Data Sciences) to reduce barriers and encourage natural overlaps.

By bringing in diverse faculty from across the university, the HC's recent model of core and affiliated faculty has similar potential to create interdisciplinary synergies. This model can thrive when driven by an optimal balance of represented disciplines and Career/TTF/Pro Tem ratios. However, models succeed only when their strengths avoid triggering weaknesses elsewhere. In this case, Department Heads in other colleges might view rotating HC faculty as a loss to their own missions. Accordingly, the HC Dean must promote a broad, unifying vision in which the HC is celebrated as an intrinsic ingredient of every department's excellence. For example, the Dean should emphasize the ways in which HC faculty and students currently engage with their peers outside of the HC and should also identify and encourage new avenues of engagement. Above all, participating faculty require strong support as they span colleges. In particular, a strong HC community is essential to avoid any challenges associated with transience. Building on my 13 years in unit head roles, I am ideally positioned to engage with Department Heads and Deans in the neighboring colleges. I would enjoy promoting the HC culture and collaborating with the HC faculty and students to realize the model's true potential.

Any honors college is only as good as the students it teaches. Teaching will always be a human endeavor for me, a way to bond with our students and pass on my knowledge to them. To fulfill their needs, we must know them well. Teaching over 10,000 students in 4 countries allowed me to adopt the best practices from each of them and my courtesy professorships in Art, Design, and Psychology extended my horizons even further. Highlights for me include using sketch classes to teach science to art students and co-chairing a seminar series that united students from computer science, human physiology, physics, psychology, and the *Teaching Effectiveness Program*. In addition to undergraduates, I have mentored over 150 UO graduate educators and my *Murdock Trust Partners in Science Award* focused on mentoring high school teachers (one teacher received a National Science Foundation Einstein Award for our collaboration). In addition to being honored with the Herman Distinguished Teaching Award and a Williams Fellowship for innovation (see my CV for a list of teaching awards), I served on both of their selection committees. This made me aware of the huge teaching talent at our university and also allowed me to learn from the wealth of proposals. My classes flourished by adopting innovations (pedagogical and technological) that left students in no doubt that physics is educational, fun, and directly applicable to their daily lives. I have published 2 textbooks to further this mission. A vibrant honors college situated within a forward-looking liberal arts university represents a unique and exciting opportunity for me to make use of these educational skills.

The HC has experienced unprecedented growth in student numbers in recent years. Serving highly motivated and ambitious students, increases in quantity must be matched by increases in quality. This balance can be achieved by ensuring that the HC's liberal arts education prepares students for their careers ahead and that student advising steers each of them on their individual journey to their career. What, then, does a liberal arts education for the modern age look like? In addition to exposing students to a wealth of topical ideas, the HC's growth in experiential learning is particularly striking. Experiential learning is clearly a key ingredient and helps prepare students for their diverse careers ahead (it also boosts recruitment and retention). The rich variety of activities across university life – education, outreach, scholarship, innovation – present many opportunities for experiential synergies. Everyone thrives when faculty aspirations in these activities are aligned to the university mission – especially our students. Some of my most rewarding moments occurred when teaching activities overlapped with research and/or outreach activities. For example, I received a Cottrell Scholarship to encourage teaching-research interactions and participated in programs that allowed middle and high school students to be inspired by the research in my laboratory.

As Director of the MSI and Head of Physics, I helped to develop and supervise impactful educational-research programs. For example, the MSI hosted one of the longest-running *Research for Undergraduates* programs in the country when I was Director (funded by the MSI along with the National Science Foundation). I also helped to establish *The Interdisciplinary Program to Accelerate the Transition from Student to Scientist* and served on the committee that administered the associated $2.8M National Science Foundation grant. The *Graduate Internship Program* allowed 60 MSI Masters students to gain professional experience by working in industrial laboratories and companies each year. In addition to overseeing this program, my responsibilities included organizing workshops to introduce students to potential hosts. When the number of physics students in the *Graduate Internship Program* peaked during my Physics Headship, it became the largest Applied Physics Masters Program in the USA. Along with the *Lens of the Market Program*, the *Graduate Internship Program* eventually reached a level of success that resulted in their broadening to university initiatives. In addition to the Physics Major, we are developing a Materials Science Major with Chemistry and we play a major role in the new Data Science Major, all of which are driven by experiential learning. As the Dean, I would explore analogous programs for HC undergraduates, including establishing connections with the Office of the Vice President for Research and Innovation to fund student experiences beyond the UO. How do we demonstrate to current and future students (and their parents) that experiential strategies work? In addition to the Dean and the faculty leading through example, our alumni should play a vital role in this demonstration. Physics has a dedicated Alumni Committee (we host a regular *Career Opportunities Speaker Series* featuring diverse external

speakers) and I would look forward to working with HC alumni to boost recruitment and invest in their academic home.

Creativity emerges in that magical space where different approaches collide. This is especially true when faculty and students from different backgrounds work together. My desire to embrace diversity flavored my personal liberal arts education. I have traveled through 75 countries and made 7 of them my home. At the UO, I have promoted diversity, equity, and inclusion principles as a teacher, a researcher, and a leader. As a lecturer, my empathy toward my students impacts my course pedagogy. My *General Physics* course incorporated 16 weekly tutorial sessions in which student teams with diverse backgrounds collaborated to help each other. As a PhD advisor, one third of my students have been women and one fifth have been from overseas (high ratios for UO Physics). In the faculty searches I have participated in, one third of the recruited faculty came from under-represented groups (again, a high number for my field). As MSI Director and Physics Department Head, I have led programs (listed in my CV) designed to both attract and nurture a diverse range of students. As a current example in Physics, the *Oregon Pathways to Industry Research Program* attracts students (from community colleges to broaden diversity and increase numbers) and the *STEM Careers Through Outreach, Research and Education Program* provides scholarships to retain students. It is crucial that these initiatives take place in an empathetic climate. I have established a culture of listening (by hosting town halls, forming a student support group, ramping up individual mentoring, and expanding our Diversity Committee) and have encouraged student involvement in shaping the Physics Department (including funding highly active student societies and establishing student membership of all physics committees). We also fund students to attend DEI-related conferences (we will host the *Pacific Northwest Conference for Undergraduate Women in Physics* in 2025). We were one of the first departments to introduce a Code of Conduct, which was acknowledged for the powerful simplicity of its declaration: "Our shared humanity is fundamental to the pursuit of physics." As the HC Dean, I would help to promote the equivalent message through strategic programs coupled with establishing a culture of listening and engagement across faculty, staff, and students.

I'll finish by describing how my research skills would translate to the HC Dean position. Driven by the liberal arts approach, my research projects thrive on interdisciplinary connections. In addition to my bionic eye project (https://www.youtube.com/watch?v=_weiAGbG4wU), I am currently developing a sports sensor to improve human performance (https://projectdasein.com), an artificial intelligence technique to distinguish fakes from artistic masterpieces (https://www.youtube.com/watch?v=BHpOGe-OADo), and I am generating patterns that reduce people's stress-levels in their working and living spaces (including carpet patterns installed in the Knight Campus, https://www.youtube.com/watch?v=HMEeEvmB3u0). In each case, I lead large innovative teams that succeed by integrating many skills. Each project benefits from my passion for outreach (I write general-audience articles for magazines such as Scientific American, I give public lectures for audiences of up to 600 people, my on-line sites attract more than 250,000 visitors, and TV documentaries on my research are viewed by many millions of people, see my CV). These outreach activities also help to support my research financially: although most of my $50M career support came from grants, I have used outreach to attract significant donations to support my research group. I am confident that the HC's recruitment, outreach, funding, and educational programs can all benefit from my drive for collaboration, communication, and funding demonstrated in my research projects.

The HC is in a period of great transition. It has experienced rapid growth over the past 4 years and has completely overhauled its faculty structure. Along with the whole university, it is also absorbing changes induced by the pandemic and our need to boost diversity, equity, and inclusion for our students, faculty, and staff. The associated challenges range from operational issues (such as the HC's financial relationship with the university, its tuition model, space within Chapman Hall, etc) to developing new educational strategies (including recruitment and retention strategies) that accommodate the demands of a rapidly evolving society. Some of the challenges are known and some will emerge. However, I'm attracted to the remarkable opportunities as we overcome these challenges. The HC is on a positive trajectory to a bright future. Wouldn't it be amazing if we came together and developed a unique liberal arts education for the modern age and that the oldest Honors College in the land trail-blazed this path to the future? Thank you for your consideration.

Best wishes,

Richard Taylor
Head of Physics

Richard Taylor Curriculum Vitae (March 2023)

1. SUMMARY

Leadership	Department Head (4 years working with 35 faculty, 2 years working with 9 faculty) Research Institute Director (8 years working with 30 faculty)
Awards/honors	69 awards/fellowships for research and teaching (eg British Royal Society Award, Cottrell Scholarship, InnoCentive Prize, Pollock-Krasner Residency, QEII Fellowship)
Research	338 publications (12 in *Nature* and *Nature* publications, 4 in *Science* and *Science* publications) 67% in the physical sciences, 20% in art and design, 13% in psychology. Citations ~ 8100, h index~43 (Google Scholar) Funding: ~US$11M (small team grants), US$75.5M (large team grants)
Innovation	Director of Fractals Research LLC, Science Director for Project Dasein, Founder of ScienceDesignLab, Founder of FractalRoundTable
Teaching	10,000 students taught in 4 countries (mean student rating of 4.6 on a 0-5 scale) Favorite student review: "If Led Zeppelin and Newton had a baby, that would be Dr. Taylor. He needs a shrine at UO. He made physics fun and interesting"
Outreach	Documentaries by ABC, BBC, PBS. Diverse presentations around the world, including Tedx, art and science museums, the Nobel Foundation and the White House. Received 275,000 visits to on-line media, e.g. http://blogs.uoregon.edu/richardtaylor

Education/Qualifications

2004	Doctor of Science (DSc) in Physics and Astronomy, University of Nottingham, UK
2004	Chartered Scientist (CSci), Science Council, UK
1998-1999	MA, Honors in Art Theory (First Class), Univ. New South Wales (UNSW), Australia
1994-1995	Certificate of Art and Design (CAD) (Distinction), Manchester School of Art, UK
1989	Chartered Physicist (CPhys), Institute of Physics, UK
1985-1988	PhD in Physics, University of Nottingham, UK
1982-1985	BSc, Honors in Physics (First Class), University of Nottingham, UK

Appointments/Positions

2018-present	Head, Physics Department and Pine Mountain Observatory, Univ. of Oregon (UO), USA
2018-present	Science Director, Project Dasein, Bend, USA
2009-present	Full Professor (Physics), Affiliated Professor (Art, Design, Psychology), UO, USA
2005-present	Director, Fractals Research LLC, Eugene, USA
2013-2014	Pufendorf Fellow, University of Lund, Sweden
2011-20	Visiting Professor, University of New South Wales (UNSW), Australia
2011	Lorentz Centre Fellow, University of Leiden, the Netherlands
2010-2018	Director, Materials Science Institute, UO, USA
2006-2008	Full Professor, Dept. of Physics and Astronomy, University of Canterbury (UC), New Zealand
1999-2006	Associate Professor, Physics Department, UO
1999-2000	Head of the Condensed Matter Physics Department, UNSW, Australia
1995-2000	Queen Elizabeth II Research Fellow, Australian Research Council, Australia
1993-1994	Research Associate, National Pulsed Magnet Laboratory, Sydney, Australia
1993	Frontier Researcher, RIKEN, Tokyo, Japan
1990-1992	Research Associate, National Research Council, Ottawa, Canada
1988-1990	Research Fellow, Science and Engineering Research Council Glasgow University and Nottingham University, UK
1985-1988	Teaching Fellow, Nottingham University, UK

2. CAREER EXPERIENCE AND ACHIEVEMENTS

2.1 Leadership and Administration

- **Institute Directorships.** I was Director of the UO *Material Science Institute* (MSI) from 2010-18. This position oversaw 30 academic faculty, 3-4 administrative staff and 130 graduate students. With a typical operating budget of $19M, the average annual grant income during my directorship was $10M. In addition to its research activities, the MSI ran highly active educational, public outreach, and diversity programs. Educational-research programs such as the Graduate Internship Program and the Lens of the Market Program reached a level of success that outgrew the MSI and resulted in their broadening to university initiatives. Given UO directorships typically span 3 years, my 8 years in this elected position reflected my colleagues' confidence in my ability to lead one of the UO's largest institutes. In 2008, I was invited to be Director of the *MacDiarmid Institute*, New Zealand's premier national research institute consisting of 41 faculty from 4 universities (I declined this opportunity to return to the UO).

- **Departmental Leadership.** In July 2018, I became Head of the UO Physics Department. Featuring 35 faculty, 4 staff, 130 graduate students, 150 majors, and teaching several thousand undergraduates, it is one of the largest UO departments. Despite my headship coinciding with the challenges of the pandemic, the department has thrived. The ratio of graduate students to faculty has increased, we reached an historic peak in annual PhD throughout (25 recruitments and 23 Defenses), and a whole year has been sliced off their average time to graduation. Our Masters program is now the largest Physics Masters program in the US. Enrollment of our physics majors has increased by over 20 percent. In addition to the physics major, we are part of a new data science major and we are developing a materials science major. I also introduced 17 Affiliated Faculty to encourage interdisciplinary overlap with 5 neighboring departments. Prior to being head, I was elected Chair of the UO Physics Department's Personnel Committee (a central committee handling critical issues) for 2009-10, 2013-14 and 2015-17. At UNSW, I was Department Head of the Condensed Matter Physics Department overseeing 9 academic faculty members from 1999-2000.

- **Promoting Diversity Through Leadership.**

  Head of Physics: The UO Physics Department hosts many programs to attract and retain a broad range of students: e.g. *Science Literacy* (novel pedagogies), *Oregon Pathways to Industry Research* (attracting students from community colleges), *STEM Careers Through Outreach, Research and Education* (providing scholarships), and *North Star* (supporting underrepresented groups in STEM). These initiatives take place in an empathetic climate. I have established a culture of listening (by hosting town halls, forming a student support group, ramping up individual mentoring and expanding our Diversity Committee) and encouraged student involvement in shaping our department (including funding highly active student societies and having student membership of all physics committees). We also host a regular Career Opportunities Speaker Series using diverse external speakers, and fund students to attend DEI conferences (we will host the Pacific Northwest Conference for Undergraduate Women in Physics in 2025). We were one of the first departments to introduce a Code of Conduct, which was celebrated at the UO for the powerful simplicity of its declaration: "Our shared humanity is fundamental to the pursuit of physics." In the faculty searches I have participated in, one third of the recruited faculty came from under-represented groups (a high number for my field).

  MSI director: I helped to develop, fund and/or participated in the following programs designed to enhance recruitment and participation of under-represented or low-income student groups: *Community for Minorities in STEM, Mad Duck Science, North Star, Pacific Northwest's Chapter of the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers, Pacific Northwest Conference for Undergraduate Women in Physics, Scholarships for Oregon Scientists II Program, Society for the Advancement of Chicanos/Hispanics and Native Americans in Science, UO Catalytic Outreach and Research Experience, UO Summer Academy to Inspire Learning, UO Summer Science Camp, UO Summer Program for Undergraduate Research, UO's Women in Graduate Sciences Group.*

• **University Administration** (UO unless specified otherwise): Heads Council (2022-23), Search Committee for the Dean of the College of Arts and Sciences (CAS) (2021-22), Smart Sportswear Advisory Board (2021-22), Provost's Promotion and Midterm Appeals Committee (2020-21), Graduate School Working Group on Racial Justice and Equity (2020-21), Chair, Senate Research Commission (2020), Academic Continuity Team (2019-20), UO-OHSU Seed Program Review Panel (2019-20), CAS Heads Council (2019-21), CAS Task Force (2018-19), Moore Inventor Review Committee (2017-18), Physics Post-tenure Review Committee (2017-18), Physics Space Committee (2016-22), Energy and Sustainable Materials Cluster Leadership Team (2014-20), Executive Subcommittee of the Space Advisory Group (2016-18), Teaching Academy (2016-22), Williams Council (2014-18), Acting Department Head (occasional, 2010-18), MSI seminar organizer (2001-02, 2010-18), Physics Personnel Committee (2002-3, 2009-10, 2013-14 and 2015-17), VPRI's Institute Review Committee (2015-16), Herman Distinguished Teaching Awards Committee (2013-15), President's Competitive Excellence Strategic Task Force (2014-15), Applied Science Ad Hoc Exploration Committee (2013-15), College and Careers Brainstorming Group (2015), Biophysics Faculty Search Committee (2013-14), Centers and Institutes Council (2013-14), Coordinating User Group and Materials/Physical Sciences User Group for the *Lewis Integrative Science Building* (2010-12), Physics Colloquium Organizer (2001, 2004, 2012), Humanities Center Advisory Board (2008-11), Physics Curriculum Committee (2009-10), Biophysics Faculty Search Committee (Chair, 2010), Intercollegiate Athletics Committee (2008-10), UC Research Advisory Group (appointed by the Pro-Vice Chancellor, 2007-8), UC Physics Teaching Curriculum Committee (2006-8), UC Physics 200-level Course Coordinator (2006-8) and the UC Rhodes and Woolf Fisher Scholarship Interview Panel (2007), Physics PhD Exam Committee (Chair, 2004-6), Physics Graduate Recruitment Committee (2001-5) and the Physics Graduate Admissions and Awards Committee (2001-2).

• **Large Research Team Management.** I have demonstrated leadership skills for all stages of research programs. This includes establishing laboratories and assembling large research teams based in Australia, Canada, New Zealand, the UK and the USA. These projects utilized my ability to create research networks that pool the resources and expertise of my laboratories with those of international leaders from 10 countries. As a current example, my bionic eye project integrates UO researchers with inter-disciplinary collaborators in Australia, New Zealand and Sweden.

• **Grant Management.** I have managed research, outreach and educational programs funded by agencies/foundations from 8 countries: the *Australian Research Council (ARC)* (Australia), *Department of Education, Employment, Training and Youth Affairs* (Australia), *Department of Industry, Science and Technology* (Australia), *Von Braun Foundation* (Austria), *National Research Council (NRC)* (Canada), *Frontier Research Program* (Japan), *Japanese Science and Technology Agency* (Japan), *Royal Society of New Zealand* (New Zealand), *Health Research Council* (New Zealand), *Crafoord Foundation* (Sweden), *Pufendorf Institute* (Sweden), *Swedish Research Council* (Sweden), *Addario Foundation* (USA), *Air Force Office of Scientific Research* (USA), *Burroughs Wellcome Fund* (USA), *Ciminelli Foundation* (USA), *Gordon and Betty Moore Foundation (USA), Kavli Foundation* (USA), *WM Keck Foundation* (USA), *Linde Martin Institute* (USA), *Living Legacy Foundation* (USA), *Murdock Trust* (USA), *National Science Foundation (NSF)* (USA), *Office of Naval Research (ONR)* (USA), *Oregon Nanoscience and Microtechnologies Institute* (ONAMI) (USA), *Pollock-Krasner Foundation* (USA), *Providence Health* (USA), *Ray Engle Foundation* (USA), *Research Corporation for Science Advancement (RCSA)* (USA), *Templeton Foundation* (USA), *British Royal Society* (UK), *Engineering and Physical Sciences Research Council (EPSRC)* (UK) and the *Science and Engineering Research Council (SERC)* (UK).

2.2 Awards, Fellowships, Scholarships, Society Memberships and Other Honors

• **Research Awards:** UO *Hatfield Award* (USA, 2023), *The Nightingale Award for Sustainability, Healthcare Design Expo* (USA, 2022), The *MetropolisLikes NYCxDESIGN Award* (USA, 2022), *NYCxDesign Interior Design Honoree* (2022), *Author Award for Top 20 Downloaded Articles, Scientific Reports* (UK, 2022), *UO Fund for Faculty Excellence Award* (USA, 2021), *UO Outstanding Career Award* (USA, 2021), *Finalist, Interior Design Best of Year Award* (USA, 2021), *UO Research as Art Exhibition Winner* (USA, 2020), *Good Design Award* from *The Chicago Athenaeum: Museum of Architecture and Design* (USA,

2019), *Interior Design Best of Year Award for Innovation* (USA, 2019), *Interior Design Best of Year Finalist, Product Category* (USA, 2019), *Architectural Product of the Year Award* (USA, 2019), *Architectural Record 2019 Winner* (2019), Gold in the *Nightingale Awards Competition*, *Healthcare Design Expo* (USA, 2019), *Buildings Merit Innovation Award* (USA, 2019), *The Interior Design HiP Award* (USA, 2019), *Product Innovations Merit Award* (2019), *The NeoCon Best of Show Innovation Award* (USA, 2019), The *Metropolis NYC-DESIGN Award* (USA, 2019), *Honorary Interior Design NYC-DESIGN Award* (USA, 2019), *The Living Legacy Award* (USA, 2018), The *UO Faculty Excellence Award* (USA 2016), Genzler Award (USA 2016), *UO Innovation and Impact Award* (USA 2016), *WM Keck Medical Research Award* (USA 2016), *InnoCentive Prize* (USA, 1 awarded from over 950 applicants in 2014), *Pufendorf Fellowship* (Sweden 2014), *Lorentz Center Visiting Fellowship* (Netherlands 2011), RCSA *Scialog Solar Energy Fellowship* (USA 2011), *Pollock-Krasner Study Center Residency* (USA 2005), *RCSA Cottrell Scholarship* (USA, 12 awarded from 122 applicants in 2003), the prestigious *Queen Elizabeth II Fellowship* (Australia, 10 awarded from 268 applicants in 1995), *RIKEN Frontier Researcher* (Japan 1994) and a *SERC Fellowship* (UK, awarded to young researchers displaying "exceptional promise for leading research," 10% success rate for applications in 1988).

- **Teaching Awards:** *Rippey Innovative Teaching Award* (2022), *Rippey Innovative Teaching Award* (2021), *Champion Professor* (UO students' top 25 professors) (USA 2011), the UO *Williams Fellowship* for innovative teaching (USA 2010), UO *Thomas Herman Distinguished Teaching Award* (2010) (USA, a highly competitive award with only 2 awarded annually from over 1000 instructors), *Murdock Trust Partners in Science Award* (USA 2007) and the *Outstanding Teacher in Higher Education Award* from the *Oregon Academy of Sciences* (USA 2005). The *RCSA* showcased my *Cottrell Scholarship* in 2007 and 2011 as an example of how to successfully integrate teaching and research activities.

- **International Travel Awards:** *Australian Research Council* (Australia 2020, 2019, 2018, 2015), *Vivid Sydney* (Australia 2016), *Australian Research Council* (Australia 2015), *Kavli Foundation* (USA 2014), *EPSRC Global Engagement Visitor* (UK 2013), *UNSW Visiting Fellowship* (Australia 2012), *RCSA* (USA 2011), *Pompidou Centre* (France 2009), *Von Braun Foundation* (Austria 2008), *Technet Australia* (Australia 2007), *MacDiarmid Institute* (New Zealand 2007), *Arnold Schoenberg Center* (Austria 2005), *Forum21* (France 2005), *American Institute of Architects* (USA 2005), *Guggenheim Foundation* (Italy 2004), *Royal Swedish Academy* (Sweden 2003), *Sigma Xi Research Society* (USA 2001), *Advanced Telecommunications Research Institute of Japan* (Japan 2001), *Nobel Foundation* (Sweden 2000), *British Royal Society* (UK 1994), *Japanese Frontier Research Program* (Japan 1993), *NATO* (UK 1989) and a *Kilby Scholarship* (UK 1987).

- **Writing Awards.** Finalist in the *Northwest Perspectives Essay Contest* (2010), Nomination from the editors of *Scientific American* for the *American Institute of Physics Science Writing Award* (2003).

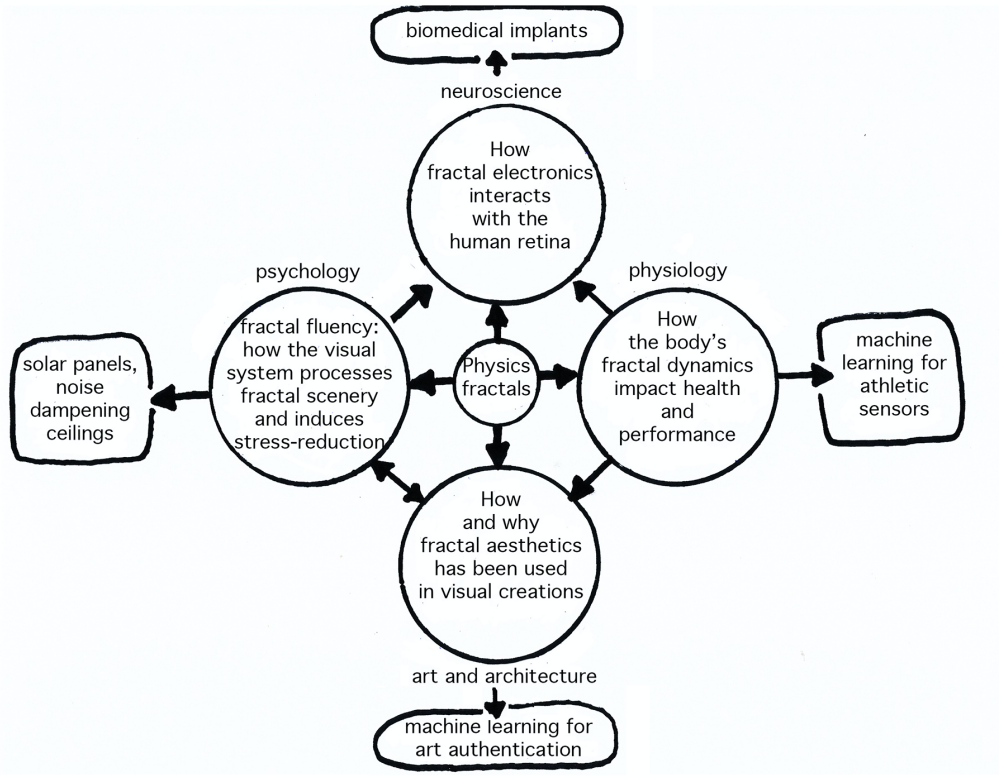
- **Society Memberships:** *American Physical Society Fellow* USA, *National Academy of Inventors* USA, *Sigma Xi Research Society* USA (honorary membership in recognition of "outstanding interdisciplinary research"), *Society for Chaos Theory in Psychology and the Life Sciences* USA, *Institute of Physics* UK, *Science Council* UK.

- **Other Honors:** Invited twice to the White House (Office of Science and Technology Policy) to discuss my research (2014), *National Silver Medal Award* from the *US National Council for Advancement and Support of Education* (2006), an A rating from New Zealand's 5-year national assessment scheme (the *Performance Based Research Fund,* 2006), and a Doctor of Science (Nottingham University, 2004) for recognition of outstanding contributions to science (D.Sc. requirements include more than 100 publications in peer-reviewed journals and peer recognition as a leading, international scientist sustained over a 15-year period).

2.3 Research

- **Interdisciplinary Collaborations.** My research addresses fundamental questions about fractals (which are patterns that repeat at increasingly fine size-scales) and the chaotic processes that create them. My main

projects focus on applying the concept of bio-inspiration to nanoscience, visual science and visual art, and feature an interplay between fundamental and applied research. The diverse applications of my work range from sight-restoration using retinal implants to stress-reduction using art. I have published research in art, architecture, biology, chemistry, design, environmental science, mathematics, neuroscience, physics, physiology and psychology. Details can be found on my website: http://blogs.uoregon.edu/richardtaylor



- **Research Innovation, Commercialization and Consultancy.** My company *Fractals Research LLC* generates and analyzes artistic patterns. Art authenticity organizations (such as the *International Foundation for Art Research* and the *Pollock-Krasner Foundation*) commission our analysis of major artworks. We review as many as 40 paintings annually and have formed a data science collaborative, *Artistic Intelligence*, to develop artificial intelligence methods applicable to art works. *Fractals Research* also leads international collaborations such as *ScienceDesignLab* and *FractalRoundTable* that generate and investigate stress-reducing patterns for design and architecture applications. I am also science director for *Project Dasein* which is developing a novel sports sensor. Other consultancy work includes: *Innocad Architecture* (2017-22), *13$9 Design* (2017-22), *Master Plan Industries* (2021), *MarshMallow Laser Feast* (2020), *Tensegrity Physical Therapy* (2016-21), *Fact Design* (2020-22), *Mohawk Group* (2018-22), *Opportunities Development Group* (2014), *Envision Design PLLC* (2005), *Eco-Integrations Inc*. (2001-2003), *Hawaii Center for Learning Science Through Art* (2001), *Prince of Wales Hospital, Sydney* (1999), *Sydney Police Force* (1999) and scientific advisor for architects of the $1.2M UNSW *Centre for Quantum Computing* (1994).

2.4 Teaching/Education

- **Lecturing Experience.** I have gained a wide experience of different approaches to university-level physics education by teaching in Australia, New Zealand, the UK and the USA. I have taught a broad spectrum of undergraduate and graduate courses. My current passion focuses on teaching interdisciplinary classes of up to 500 students (100 and 200 level) which require sophisticated approaches to pedagogy. I have participated in various UO programs which keep me informed of novel ideas (e.g. The Herman Teaching Awards Committee, Science Literacy Program, Teaching Academy and Williams Council).

• **Courtesy Professorships.** For my UO Professorship of Psychology, teaching responsibilities included co-chairing the *Complexity and Nonlinear Dynamics Focus Group* (which featured a seminar series for undergraduates and graduates from computer science, human physiology, physics, psychology and the Teaching Effectiveness Program) and advising graduate students. For my UO Professorship of The History of Art and Architecture and Professorship of Product Design, teaching responsibilities included lectures at an international sketch class (Italy 2004) organized by the UO Art Department and contributing to the associated art exhibitions (2005). My *RCSA Cottrell Scholarship* focused on communicating science to art students.

• **Curriculum Development.** As Head of Physics, my current priority for undergraduate education focusses on retention of our majors and also integration of physics into interdisciplinary programs such as the new data science major and the Honors College. In terms of service courses, our summer session admissions have doubled in size. At the graduate level, we have seen historic numbers in terms of recruitment and graduation. To encourage interdisciplinary graduate research, we have welcomed 15 affiliated faculty members from the Biology, Chemistry, Earth Sciences, and Mathematics departments and the Knight Campus. As MSI Director, my focus was on graduate program development. I worked closely with the UO *Graduate Internship Program* in which 60 MSI Masters students gained real world knowledge working in industrial laboratories and companies. The MSI also developed a *Professors of Practice* program to appoint visiting professors from industrial/national laboratories to teach UO courses on their research topics. The MSI launched UO's first *Lens of the Market* program for students and faculty wanting to learn the skills of research commercialization. I helped to develop the UO educational PhD program *Interdisciplinary Materials Program to Accelerate the Transition from Student to Scientist* and served on the committee that administered the associated US$2.8M *NSF* grant (2001-5 and 2008-9). The MSI also hosted one of the longest running *NSF Research for Undergraduates* programs in the country.

• **Mentoring Research Students**. I am head of the UO *Fractals Research Laboratory* which traditionally features 2-3 undergraduate and 4 graduate researchers. Research supervision (1995-2022) includes: 4 post-doctoral associates, 1 research associate, 20 PhD students, 23 Masters students and 35 undergraduate students. This includes students majoring in architecture, biology, chemistry, computer science, human physiology, mathematics, philosophy, physics and psychology. I have served on 62 PhD committees from architecture, chemistry, human physiology, psychology, sociology and physics.

• **Mentoring Teaching Fellows.** I have mentored ~150 UO graduate teaching fellows (2001-2018), most of whom were trained to teach tutorials for General Physics students. During 2003-6, I also participated in the *NSF* educational program *Oregon Partnership to Enhance Science, Technology, Engineering and Mathematics Education* in which graduate teaching fellows taught at rural Oregon high schools.

• **Other Mentoring.** I have participated in the UO *Summer Academy to Inspire Learning* (a summer camp for middle and high school students from low-income or underrepresented backgrounds) (2008, 2012-22), the *UO Science and Invention Fair* for K-8 students (2016-18), the *NSF Research for Undergraduates* program (2013-17), UO Honors College thesis advising, UO *Technology Entrepreneurship Program* (teaching graduate students research commercialization skills) (2012) and the *UO Catalytic Outreach and Research Experience* (a 10 week summer program designed to expose community college students to world-class research experiences) (2010). My *Murdock Trust Partners in Science* award focused on mentoring high school teachers (one teacher was awarded a NSF *Einstein Award* for the research conducted in my laboratory) (2007-9). I have also mentored local artists in art-science projects (2012-22) and public speakers (e.g. holding on-line question-answer sessions for the *Nanoscale Informal Science Education Network* (2010), and lectured to artists (*Manchester School of Art* 1994-95).

• **Reviewing Teaching Tools.** I have reviewed undergraduate textbooks: *Physics* by Cutnell (Wiley 2011, 2016), *College Physics* by Knight, Jones and Field (Pearson 2015), *College Physics* by Giordano (Cengage Learning 2013), *General Physics* by Freedman et al (Freeman 2010, 2012), *General Physics* by Giancoli (Pearson 2004, 2009) and *Viewpoints: Lessons in Mathematics and Art* by Franz (Princeton University Press 2005). I have also reviewed educational DVDs (*The Teaching Company* 2007-8), science education

magazines (*Science News* 2007) and educational TV programs (*NOVA's ScienceNow* and *Digital Art Forgery*).

- **Impact of my Research on Education.** My research has been the subject of lectures at other universities, demonstrating the impact of my research on education. This includes the following courses: *Aesthetic Computing* (University of Florida, USA), *Art and Physics* (Physics Department, Hong Kong University), *Complexity* (Philosophy Department, Xavier University, USA), *Computational Physics* (Physics Department, Oregon State University, USA), *From Hamiltonians to Chaos* (School of Physics and Astronomy, Nottingham University, UK), *Math in The Art Curriculum* (Mathematics Department, Connecticut College, USA), *Methods in Written Communication* (English Department, University of Alaska, USA), *Science and Art* (Art History and Physics Departments at Boston College, USA), *The Number Mysteries* (Department of Continuing Education, Oxford University). My research also appears in educational DVDs: *Chaos Theory* (by S. Strogatz, Cornell University) and *The Quantification of Style* (by D. Rockmore, Dartmouth College).

2.5 Publications and Writing

- **Publications:** I have written scholarly, educational and general audience publications. These include books, book chapters, refereed articles and invited publications (review articles and commissioned contributions for journals/magazines such as *Nature, New Scientist, Physics Today, Physics World, Science, Scientific American and Smithsonian*). Journal editors regularly invite me to write opinion pieces on books and exhibitions (e.g. in *Nature, Science, The Physicist* and *Physics World*) and publishers invite me to write reviews for popular science books. My 10 most cited papers reflect my inter-disciplinary interests: 3 are in physics, 3 in art, and 4 in psychology. My publication list is available on request.

- **Impact:** Reflecting my status within the Fractals research community, I was asked to write the memorial eulogy of Benoit Mandelbrot (founder of the field of Fractals), his obituary in *Physics Today* (2011) and his *Proctor Prize* announcement (2002). Reflecting my status within the Chaos research community, I was asked to write a chapter of the book celebrating the life of Edward Lorenz (founder of the field of Chaos) (2008). Reflecting the impact of my art-science projects, I was commissioned by *Science* to write a career essay (2001).

- **Undergraduate Textbooks**. I authored the *General Physics Study Guide* (Pearson 2013, 2014, 2016, 2017 editions) and *Light, Color and Vision* (Pearson, 2011, 2012, 2014 editions). I edited a custom edition of *Physics: Principles and Applications* (Pearson, 2010). I have been asked to co-write *College Physics* for Pearson. Their top editorial representative (Jim Smith) noted my communication skills impressed him "more than any potential author in the past 18 years of working with the company."

2.6 Talks, Outreach and Media Coverage

- **Academic Talks and Webinars.** Invitations include conference banquet speeches and plenary talks, and come from diverse fields (architecture, art, electrical engineering, linguistics, mathematics, non-linear science, physiology, psychology and physics) and countries (Australia, Austria, Belgium, Brazil, Canada, China, Egypt, France, Germany, Holland, Iran, Italy, Japan, Mexico, New Zealand, Norway, Portugal, Spain, Sweden, Thailand, Turkey, the UK and the USA). The subjects of my talks have included: abstract art, the art-science divide, bionic eyes, Chaos, crop circles, Fractals, human vision, industrial physics, interdisciplinary collaboration, Jackson Pollock, Leonardo Da Vinci, Mauk Escher, Modern physics, nanotechnology, Nikola Tesla, quantum physics, retinal implants, the science of athletics and the science of creativity. My webinar on Fractal Design (hosted by the Mohawk Group in 2020) was attended by over 800 people and I am currently contributing webinars for the Science in Design Certification Program.

- **Conference Discussion Panels.** I have been invited to serve on panels with themes ranging from Einstein to Modern Art. These include: *10th International Conf on Advanced Materials and Nanotechnology* (New Zealand, 2023); *New York Design Week: Relaxing Floors* (USA, 2022); *NeoCon: Fractal Fluency for the*

Built Environment (USA, 2021); *Yale Cognitive Architecture* (USA, 2021); *New York Design Week: Relaxing Floors* (USA, 2020); *Improving Vision for All* (Sweden 2014); *Capacity Building for Industrial Physics in Emerging and Developing Economies* (Italy 2012); *Oxford Round Table* (UK 2010); *Oregon Nanoscience and Microelectronics Institute Symposium* (USA 2006); *Forum21* (France 2005), *Science and Literature International Conference* (France 2004); *Sigma Xi* and *Phi Beta Kappa Intersections in Science and Humanities Research* (USA 2001); *International Conference on the Interdisciplinary Study of Symmetry* (Australia 2001).

- **Public Lectures.** I have been invited to give many public lectures around the world. These lectures communicate art and science to broad audiences, attracting up to 650 people per lecture. For example, I hold the attendance record for the *Oregon Museum of Science and Industry Science Pub Talks* (350 people). Other examples include: *TEDx Talks* (USA 2014 and 2018), the *Museum of Contemporary Art Sydney (*Australia 2016), *Museum of Sketches* (Sweden 2014), *Portland Institute of Contemporary Art* (USA 2013), *SunRiver Nature Center* (USA 2012), *PICNIC (*Amsterdam 2011), *Tehran Museum of Contemporary Art* (Iran 2011), *Oregon Museum of Science and Industry* (USA 2010), *Pompidou Centre* (France 2009), *Australian Technet* (Australia 2007), *New Zealand Royal Society* (New Zealand 2007), *Schoenberg Center* (Austria 2005), *Guggenheim Museum* (Italy 2004), *Phi Beta Kappa and Sigma Xi Research Societies* (USA 2001), *Pollock-Krasner Center* (USA 2001), *Australian National Art Gallery* (Australia 1999, 2001) and the *Australian Museum* (Australia 1998).

- **Outreach.** I am part of the UO's monthly *Run with a Researcher* program (2016-present). I belong to the *Tate Gallery's Bigger Picture* project, in which experts present novel interpretations of art (UK 2003-present). I have written information panels to accompany exhibits at the *Tate Modern Gallery* (UK) and the *Portland Art Museum* (USA). My art, sculptures and photography feature in exhibitions to promote art-science endeavors to wider audiences. These include: *Winner of the UO Research as Art Competition* (2019), *The National Museum of Mathematics* (USA 2015), *Scientific American's The Unreasonable Beauty of Mathematics* exhibition (USA 2011), *Oregon Museum of Science and Industry* (USA 2010), *Portland Art Museum* (seen by 60,000 visitors in 2009), the *UO Knight Library's Art of Science* (USA 2009), *Sacred Heart Hospital* (USA 2004), the *Manchester School of Art* (UK 1995), the *Royal Northern College of Music* (UK 1994) and the *Whitworth Art Gallery* (UK 1994). I am on the Art Committees for the UO Lewis Integrative Science Building and the Knight Campus for Accelerating Scientific Impact, in charge of developing a $1M art project. In 2013, I was a visiting artist at the *Portland Institute of Contemporary Art* exploring art-science projects. In 2012, I initiated the Artist in Residence Program for the UO *Lewis Integrative Science Building* designed to help artists describe science to the public. I have also been the cover artist for the *Journal of Non-linear Dynamics, Psychology and Life Sciences* in 2005 and 2020. My research has also appeared on the front cover of three editions of *Physics World*.

- **Radio, Television and Web Coverage.** I regularly give interviews on radio and TV programs in Australia, New Zealand, the UK and the USA (60 in the past 30 years). I participate in the UO *Experts Program* in which selected academics answer media inquiries. I featured in the *NHK Japan* documentary *Pollock* (2012), the BBC TV program *The Code* (2011) and the *PBS NOVA* episode *Hunting the Hidden Dimension* (2008). I was the subject of a 30-minute national TV program (the *Art of Science*, *Australian Broadcasting Company*, 1998) and played a central role in the theme development and in writing the narration. These documentaries can be downloaded from my UO website and have received over 275,000 views. In 2020, a UO media story on my research received more reads than any previous UO story (with over 80,000 reads within the first day of posting).

- **Coverage by Journalists.** My work has been the subject of hundreds of articles in journals/magazines (e.g. *Art News, The Atlantic, Discover, Nature, New Yorker, New Scientist, Physics World, Physics Today, Popular Mechanics, Popular Science, Salon, Science, Science News, Scientific American, Smithsonian,* and *Time*) and in prominent newspapers in Australia *(The Canberra Times, Sydney Morning Herald),* Canada *(National Post),* France (*Liberation*), Germany (*Der Spiegel*), India (*The Hindu, Times of India*), Italy (*Catholic On-line*), Sweden (*Svenska Dagbladet*), the USA *(e.g. The Boston Globe, Chicago Sun Times, Chicago Tribune, Houston Chronicle, Idaho Statesman, International Business Times, Los Angeles Times,*

New York Times, Oregonian, San Diego Tribune, Wall Street Journal, USA Today, Vanity Fair, Washington Post and *Google News)* and the UK (e.g. *The Daily Mail, Daily Telegraph, Guardian, Independent* and *The Times)*.

• **Coverage by Authors.** My work features in popular-style art and science books (e.g. *The Art of Classic Planning* by N. Buras, *The Artful Universe* by J. Barrow, *Clouds Are Not Spheres* by N. Lesmoir-Gordon, *Cognitive Architecture* by A. Sussman, *Colliding Worlds* by A. Miller, *The Complete Idiot's Guide to String Theory* by G. Musser, *Earth Color* by E. Burleigh, *Fractal Worlds* by M. Frame and A. Urry, *Fractals, Graphics and Mathematics Education* by M. Frame et al, *In the Pursuit of Elegance* by M. May, *Introducing Fractal Geometry* by N. Lesmoir-Gordon et al, *Losing Eden* by L. Jones, *Jackson Pollock: Veiling the Image* by D. Wigal, *The Nature Fix* by F. Williams, *Quantum Technology* by G. Milburn, Phythm in Art, Psychology and New Materials by G. Minissale, *Simplexity* by J. Kluger, *The Shape of Green: Aesthetics, Ecology and Design* by L. Hosey, *The Story of Measurement* by A. Robinson and Winged Gifts of Grace by L. Compton), key research books (e.g. *Encyclopedia of Non-linear Science* by A. Scott, *Introduction to Quantum Chaos* by K. Nakamura et al, *Network Visualization* by M. Lima, *Quantum Chaos and Quantum Dots* by K. Nakamura et al and *Transport in Nanostructures* by D. Ferry et al) and an undergraduate text book (*Calculus* by R. Larson et al).

2.7 Professional Activities

• **Journal Editorial Positions:** *Chaos and Complexity Letters* (Editorial Board 2004-2020), *Journal of Non-linear Dynamics, Psychology and Life Sciences* (Editorial Board 2004-2020), *Nature* (Reader Advisory Panel 2008-10) and *Pattern Recognition Letters* (Guest Editor 2006). I have been asked to join the editorial board of *Sustainability* and will join in the future.

• **Journal Reviewing:** *Advances in Physics*, *Annals of Physics*; *Arts*; *Applied Network Science; Behavior Research Methods*; *Biology Letters*; *British Journal of Psychology*; *Chemical Physics Letters*; *Color Research and Applications*; *Computers in Biology and Medicine*; *Computational Statistics and Data Analysis*; *Entropy; Consciousness and Cognition; Europhysics Letters*; *Fractals; Frontiers in Cognition*; *Frontiers in Physiology*; *Journal of Applied Physics*; *Journal of Applied Surface Science*; *Journal of Biourbanism*; *Journal of Chaos*; *Journal* of *Chaos and Graphics*; *Journal of Cognition and Emotion*; *Journal of Computational Methods in Sciences and Engineering; Journal of Consciousness Studies*; *Journal of Discrete Dynamics in Nature and Society*; *Journal of Environmental Psychology*; *Journal of Mathematical Imaging and Vision*; *Journal of Nanotechnology*; *Journal of Non-linear Dynamics, Psychology and Life Sciences*; *Journal of Perceptual Imaging; Journal of Perception*; *Journal of the Royal Society*; *Journal of Surface Science*; *Journal of Systems Research and Behavioral Science*; *Knowledge Based Systems*; *Leonardo*; *Mathematical Problems in Engineering*; *Nanomaterials*; *Nanotechnology*; *Nature*; *Neural Regeneration Research*; *Neuroreports*; *Neuroscience Letters*; *Philosophies*; *Physica A*; *Physica B*; *Physical Review B*; *Physical Review E*; *Physical Review Letters*; *Proceedings of the National Academy of Sciences*; *Psychology of Aesthetics, Creativity and the Arts*; *Results in Physics*; *Science*; *Transactions on Applied Perception*; and *Trends in Cognitive Sciences*.

• **Grant Reviewing:** *The ARC* (Australia), *Civilian Research and Development Foundation* (USA), *Fulbright Program* (USA), *Guggenheim Foundation* (USA), *Lokey Science and the Human Condition Fund* (USA), *National Institutes of Health (NIH)* (USA), *NSF* (USA), *ONAMI* (USA), *ONR* (USA), *RCSA* (USA), *Templeton Foundation* (USA) and *The Leverhulme Trust* (UK).

• **Grant Review Panels:** The Nanometrology, Nanoelectronics and NanoBioTechnology Research Initiative Panel (this 4 member panel allocated US$14.2M funds from the *ONR* and *ONAMI* between 2006-12), Juror for *The Guild of Natural Science Illustrators* (2010-12), UO *Oregon Humanities Center* Research Panel (2008-11), *Royal Society of New Zealand* Chemical and Physical Sciences Fellowship Panel (2006-8), International Expert for the *Australian Academy of Sciences* (2001-5), *NIH* Scientific Review Panel for *Mind, Body and Health* (2004) and the *Australian Nanotechnology Benchmarking Project* (2003).

• **Reviewing Institutes.** I served on an international 3-member review team of the *Pufendorf Institute*, Sweden (2016). I also conducted the *Oregon Humanities Center's* 10-year review for the UO VPRI's office (2016).

Research publications (1985-2023)

1. "Angular Dependence of Magnetoresistance Fluctuations in Submicron n^+GaAs Wires"
P.C. Main, L. Eaves, **R.P. Taylor**, G.P. Whittington, S. Thoms, S.P. Beaumont and C.D.W. Wilkinson
Proceedings of The 18th International Conference on the Physics of Semiconductors, Stockholm, 1986
World Scientific Press 1591 (1986) (REFEREED)

2. "Universal Conductance Fluctuations in the Magnetoresistance of Submicron n^+GaAs Wires"
G.P. Whittington, **R.P. Taylor**, P.C. Main, L. Eaves, S. Thoms, S.P. Beaumont, C.D.W. Wilkinson, C.R. Stanley and J. Frost
Proceedings of "The 2nd International Conference on Superlattices, Microstructures and Microdevices", Goteburg, Sweden, 1986
Superlattices and Microstructures **2** 381 (1986) (REFEREED)

3. "Aperiodic Quantum Magnetoresistance Oscillations in Submicron n^+GaAs Wires"
R.P. Taylor, L. Eaves, P.C. Main, G.P. Whittington, S. Thoms, S.P. Beaumont and C.D.W. Wilkinson
Proceedings of The Application of High Magnetic Fields in Semiconductor Physics, Wurzburg, West Germany, 1986
Springer, Solid State Sciences **71** 328 (1987) (REFEREED)

4. "Fourier Analysis of Universal Conductance Fluctuations in the Magneto-resistance of Submicron-size n^+GaAs Wires"
M.L. Leadbeater, **R.P. Taylor**, P.C. Main, L. Eaves, S.P. Beaumont, I. McIntyre, S. Thoms and C.D.W. Wilkinson
Proceedings of The International Symposium on GaAs and Related Compounds, Heraklion, Greece, 1987
The Institute of Physics Conference Series **91** 573 (1988) (REFEREED)

5. "Universal Conductance Fluctuations in the Magnetoresistance of Submicron-size n^+GaAs Wires and Laterally Confined n^-GaAs/(AlGa)As Heterostructures"
R.P. Taylor, M.L. Leadbeater, G.P. Whittington, P.C. Main, L. Eaves, S.P. Beaumont, I. McIntyre, S. Thoms and C.D.W. Wilkinson
Proceedings of the "7th International Conference on Electronic Properties of Two Dimensional Systems", Santa Fe, USA, 1987
Surface Science **196** 52 (1988) (REFEREED)

6. "Electron Beam Lithography and Dry Etching Techniques for the Fabrication of Quantum Wires in GaAs and (AlGa)As Epilayer Systems"
S.P. Beaumont, C.D.W. Wilkinson, S. Thoms, R. Cheung, I. McIntyre, **R.P. Taylor**, M.L. Leadbeater, P.C. Main and L. Eaves
Proceedings of The International Conference on the Physics and Technology of Submicron Structures, Mauterndorf, Austria, 1988
Springer, Solid State Sciences 14 (1988) (REFEREED)

7. "Electron Heating in a Submicron-size n^+GaAs Wire"
R.P. Taylor, P.C. Main, L. Eaves, S.P. Beaumont, S. Thoms and C.D.W. Wilkinson
Proceedings of "The 3rd International Conference on Superlattices, Microstructures and Microdevices", Trieste, Italy, 1988
Superlattices and Microstructures **5** 575 (1988) (REFEREED)

8. "Aperiodic Conductance Fluctuations as a Probe of Changes in the Microscopic Scattering Configuration in n^+GaAs:Si Wires"
R.P. Taylor, P.C. Main, L. Eaves, S.P. Beaumont, S. Thoms and C.D.W. Wilkinson

Proceedings of The 19th International Conference on Physics of Semiconductors,
Warsaw, Poland, 1988
The Institute of Physics, Polish Academy of Sciences **1** 83 (1988) (NON-REFEREED)

9. "Electrical Properties of Low Dimensional Semiconductors"
R.P. Taylor
PhD Thesis, Nottingham University (1989) (REFEREED)

10. "Magnetoresistance Effects in Laterally Confined n^-GaAs/(AlGa)As Heterostructures"
R.P. Taylor, P.C. Main, L. Eaves, S. Thoms, I. McIntyre, S.P. Beaumont, and C.D.W. Wilkinson
Journal of Physics: Condensed Matter **1** 10413 (1989) (REFEREED)

11. "Conduction in n^+GaAs Wires"
P.C. Main, **R.P. Taylor**, L. Eaves, S. Thoms, S.P. Beaumont and C.D.W. Wilkinson
Proceedings of "The Physics and Engineering of One and Zero Dimensional Semiconductors", NATO Summer School, Cadiz, Spain 1989
NATO ASI Series B: Physics **214** 51 (1990) (REFEREED)

12. "Electronic Properties of Laterally Confined n^-GaAs/(AlGa)As Heterostructures"
R.P. Taylor, P.C. Main, L. Eaves, S. Thoms, I. McIntyre, S.P. Beaumont and C.D.W. Wilkinson
Proceedings of "The 4th International Conference on Modulated Semiconductor Structures", Ann Arbor, USA, 1989
Surface Science **228** 269 (1990) (REFEREED)

13. "Magnetoresistance Oscillations in a 2DEG Subject to a One Dimensional Periodic Potential"
M. Davison, E.S. Alves, M. Dellow, P.H. Beton, **R.P. Taylor**, P.C. Main, L. Eaves, S.P. Beaumont, C.D.W. Wilkinson, J. Portal and L. Curry
Proceedings of The 20th International Conference on the Physics of Semiconductors, Thesaloniki, Greece, 1990
World Scientific Press **3** 2423 (1990) (NON-REFEREED)

14. "Mesoscopic Charge Mapping by Conductance Fluctuations"
M. Davison, **R.P. Taylor**, P.C. Main, P.H. Beton, S.P. Beaumont and C.D.W. Wilkinson
Proceedings of "The 19th International Conference on Low Temperature Physics", Brighton, UK, 1990
Physica B **165** and **166** 865 (1990) (REFEREED)

15. "Temperature and Angular Dependence of Magnetoresistance Oscillations in a 2DEG Subjected to a Periodic Potential"
M. Davison, **R.P. Taylor**, E.S. Alves, P.H. Beton, M. Dellow, P.C. Main, L. Eaves, M. Henini, O.H. Hughes, S.P. Beaumont and C.D.W. Wilkinson
Proceedings of "The 19th International Conference on Low Temperature Physics", Brighton, UK, 1990
Physica B **165** and **166** 867 (1990) (REFEREED)

16. "Temperature Dependence of Magnetoresistance Oscillations in a 2DEG Subjected to a Periodic Potential"
P.H. Beton, P.C. Main, M. Davison, M. Dellow, **R.P. Taylor**, E.L. Alves, L. Eaves, S.P. Beaumont and C.D.W. Wilkinson
Physical Review B **42** 9689 (1990) (REFEREED)

17. "Collimation Effects in Quantum Point Contacts"
R.P. Taylor, A.S. Sachrajda, J.A. Adams, P.T. Coleridge and P. Zawadzki
Proceedings of "The International Symposium on Analogies in Optics and Micro-electronics", Eindhoven, The Netherlands, 1991
Physica B **175** 243 (1991) (REFEREED)

18. "Experimental Investigation of Quantum Point Contacts Separated by Open and Enclosed Regions"
R.P.Taylor, A.S.Sachrajda, J.A.Adams, C.R.Leavens, P.Zawadzki and P.Coleridge
Proceedings of "The International Symposium on Nanostructures and Mesoscopic Systems", Santa Fe, USA, 1991
Superlattices and Microstructures **11** 219 (1992) (REFEREED)

19. "Classical and Quantum Mechanical Transmission Effects in Submicron-Size Dots"
R.P. Taylor, A.S. Sachrajda, J.A. Adams, P. Zawadzki, P.T. Coleridge and M. Davies
Proceedings of "The 9th International Conference on Electronic Properties of Two Dimensional Systems", Nara, Japan, 1991
Surface Science **263** 247 (1992) (REFEREED)

20. "Low Frequency Noise in Multiple Quantum Point Contact Systems"
R.P. Taylor, S. Fortin, A.S. Sachrajda, J.A. Adams, M. Davies, M. Fallahi, P.T. Coleridge and P. Zawadzki
Physical Review B **45** 9149 (1992) (REFEREED)

21. "Non-linear Behaviour in the Magneto-transport through Continuous-gate and Split-gate Nanostructures"
R.P. Taylor, S. Fortin, A.S. Sachrajda, J.A. Adams, P. Zawadzki, P.T. Coleridge, M. Davies and P. Marshall
Proceedings of "The 6th Canadian Semiconductor Technology Conference", Ottawa, 1992
Canadian Journal of Physics **70** 1001 (1992) (REFEREED)

22. "Quantum Interference Effects as a Characterisation Tool to Probe the Sidewalls of Submicron-size n^+GaAs Channels"
R.P. Taylor, P.C. Main, L. Eaves, S. Thoms, S.P. Beaumont and C.D.W. Wilkinson
Proceedings of "The 6th Canadian Semiconductor Technology Conference", Ottawa, 1992
Canadian Journal of Physics **70** 979 (1992) (REFEREED)

23. "Discrete Electron Effects in Lateral Quantum Islands"
A.S. Sachrajda, **R.P. Taylor**, C. Dharma-Wardana, J.A. Adams, P. Zawadzki, P.T. Coleridge and M. Davies
Proceedings of "The 6th Canadian Semiconductor Technology Conference", Ottawa, 1992
Canadian Journal of Physics **70** 1148 (1992) (REFEREED)

24. "The Effect of Coulomb Interactions on the Magnetoresistance Oscillations of Quantum Dots"
C. Dharma-Wardana, **R.P. Taylor** and A.S. Sachrajda
Solid State Communications **84** 631 (1992) (REFEREED)

25. "Aharonov-Bohm Oscillations in the Coulomb Blockade Regime"
R.P. Taylor, A.S. Sachrajda, P. Zawadzki, P.T. Coleridge and J.A. Adams
Physical Review Letters **69** 1989 (1992) (REFEREED)

26. "Magneto-conductance Oscillations in Quantum Dots"
C. Dharma-Wardana, A.S. Sachrajda and **R.P. Taylor**
American Physical Society Bulletin **38** 699 (1993) (UNREFEREED, EXTENDED ABSTRACT)

27. "Transport Properties in a Quantum Dot in Magnetic Fields"
K. Ishibashi, J.P. Bird, **R.P. Taylor**, M. Stopa, T. Sugano and Y. Aoyagi
Proceedings of Alloy Semiconductor Physics and Electronics (Japan)
II-9 69 (1993) (REFEREED)

28. "Demonstration of Quantum Dots and Quantum Wires with Removable Impurities"
Y. Feng, A.S. Sachrajda, **R.P. Taylor**, J.A. Adams, M. Davies, P. Zawadski, P.T. Coleridge, D. Landheer, P.A. Marshall and R. Barber
Applied Physics Letters **63** 1666 (1993) (REFEREED)

29. "Spin-controlled Resonances in the Magneto-transport in Quantum Dots"
A.S. Sachrajda, **R.P. Taylor**, C. Dharma-Wardana, P. Zawadski, J.A. Adams and P.T. Coleridge
Physical Review B Rapid Communications **47** 6811 (1993) (REFEREED)

30. "Fabrication of Nanostructures with Multi-level Architecture"
R.P. Taylor, J.A. Adams, M. Davies, P.A. Marshall and R. Barber
Journal of Vacuum Science and Technology B **11** 628 (1993) (REFEREED)

31. "Zero and Low Magnetic Field Characterisation of AlGaAs/GaAs Lateral Dots"
R.P. Taylor, A.S. Sachrajda, J.A. Adams, P.T. Coleridge and P. Zawadzki
Physical Review B **47** 4458 (1993) (REFEREED)

32. "The Fabrication of Nanostructures with Addressable Submicron Schottky Gate and Ohmic Contacts"
Y. Feng, M. Davies, A.S. Sachrajda, **R.P. Taylor**, J.A. Adams, P. Zawadzki, P.T. Coleridge, P. Marshall and R. Barber
Proceedings of "The International Semiconductor Device Research Symposium",
Charlottesville, USA, 1993 (REFEREED)

33. "Investigation of Ohmic Contacts to AlGaAs/GaAs Heterojunctions"
P.T. Coleridge, M. Davies, Y. Feng, **R.P. Taylor**, J. McCaffrey and P.A. Marshall
Proceedings of The American Physical Society Annual Meeting, Pittsburgh, U.S.A., 1994
American Physical Society Bulletin **39** 251 (1994) (UNREFEREED, EXTENDED ABSTRACT)

34. "Gate-induced Periodicities in High Quality Electron Systems in the Extreme Quantum Limit"
C.J. Mellor, **R.P. Taylor**, R.G. Clark, A.G. Davies, S.A. Brown, E.E. Mitchell, J.J. Harris and C.T. Foxon
Proceedings of "The American Physical Society Annual Meeting", Pittsburgh, U.S.A., 1994,
American Physical Society Bulletin **39** 351 (1994) (UNREFEREED, EXTENDED ABSTRACT)

35. "Artificial Impurities in Quantum Wires: From Classical to Quantum Behaviour"
G. Kirczenow, A.S. Sachrajda, Y. Feng, **R.P. Taylor**, L. Henning, J. Wang, P. Zawadzki and P.T. Coleridge
Proceedings of "The American Physical Society Annual Meeting", Pittsburgh, U.S.A., 1994
American Physical Society Bulletin **39** 791 (1994) (UNREFEREED, EXTENDED ABSTRACT)

36. "Aharonov-Bohm Oscillations from Inter-edge State Scattering in Quantum Dots"
C. Barnes, **R.P. Taylor**, A.S. Sachrajda and T. Sugano
Proceedings of "The American Physical Society Annual Meeting", Pittsburgh, U.S.A., 1994
American Physical Society Bulletin **39** 71 (1994) (UNREFEREED, EXTENDED ABSTRACT)

37. "Density of Electrons in Lateral Quantum Dots by Semiclassical Analysis"
R.P. Taylor, A.S. Sachrajda, P.J. Kelly and D. Freedman
Solid State Communications **87** 579 (1994) (REFEREED)

38. "A Patterned Gate Architecture to Study High Quality AlGaAs/GaAs Heterostructures in the Extreme Quantum Limit"
C.J. Mellor, **R.P. Taylor**, R.G. Clark, A.G. Davies, S.A. Brown, E.E. Mitchell, J.J. Harris and C.T. Foxon
Semiconductor Science and Technology **9** 1 (1994) (REFEREED)

39. "Australian National Pulsed Magnet Laboratory for Condensed Matter Physics Research"
R.G. Clark, R.P. Starrett, R. Newbury, A.V. Skougarevsky, S.A. Brown, A.G. Davies, R.B. Dunford, D. Olatona, L.D. Macks, E.E. Mitchell and **R.P. Taylor**
Proceedings of "The 4th International Symposium on Semiconductor Physics: Frontiers in

High Magnetic Fields", Tokyo, 1993
Physica B **201** 565 (1994) (REFEREED)

40. "The Extreme Quantum Regime of 2D Electron and Hole Systems"
R.G. Clark, A.G. Davies, S.A. Brown, R.B. Dunford, P.E. Simmonds, A.C. Lindsay, R. Newbury, R.P. Starret, A.V. Skougarevsky, E.E. Mitchell, **R.P. Taylor**, C.J. Mellor B.L. Gallagher, C.T. Foxon and J.J. Harris
Proceedings of "The 4th International Symposium on Semiconductor Physics: Frontiers in High Magnetic Fields", Tokyo, 1993
Physica B **201** 301 (1994) (REFEREED)

41. "Electron-Electron Interactions and the Magnetoconductance of Submicron Quantum Dots"
A.S. Sachrajda, **R.P. Taylor**, C. Dharma-wardana, J.A. Adams, P. Zawadzki and P.T. Coleridge, Invited Contribution
Proceedings of "The 10th International Conference on Electronic Properties of Two Dimensional Systems", Newport, U.S.A., 1993
Surface Science **305** 527 (1994) (REFEREED)

42. "Anti-Collimation of Ballistic Electrons by a Potential Barrier"
P.T. Coleridge, **R.P. Taylor**, A.S. Sachrajda and J.A. Adams
Proceedings of "The 10th International Conference on Electronic Properties of Two Dimensional Systems", Newport, USA, 1993
Surface Science **305** 448 (1994) (REFEREED)

43. "Fabrication and Characterisation of Multi-level Lateral Nano-devices"
R.P. Taylor, Y. Feng, A.S. Sachrajda, J.A. Adams and M. Davies
Proceedings of "The 10th International Conference on Electronic Properties of Two Dimensional Systems", Newport, USA, 1993
Surface Science **305** 648 (1994) (REFEREED)

44. "Artificial Impurities in Quantum Wires: From Classical to Quantum Behaviour"
G. Kirczenow, A.S. Sachrajda, Y. Feng, **R.P. Taylor**, L. Henning, J. Wang, P. Zawadski and P.T. Coleridge
Physical Review Letters **72** 2069 (1994) (REFEREED)

45. "Magneto-Coulomb Oscillations"
J.P. Bird, K. Ishibashi, M. Stopa, **R.P. Taylor**, Y. Aoyagi and T. Sugano
Physical Review B Rapid Communications **49** 11488 (1994) (REFEREED)

46. "Magnetoresistance of a Nanoscale Antidot"
A.S. Sachrajda, Y. Feng, **R.P. Taylor**, G. Kirczenow, L. Henning, J. Wang, P. Zawadski and P.T. Coleridge
Physical Review B **50** 10856 (1994) (REFEREED)

47. "The Role of Surface Gate Technology for AlGaAs/GaAs Nanostructures"
R.P. Taylor
Journal of Nanotechnology **5** 183 (1994) (REFEREED)

48. "Physical and Electrical Characterisation of Ohmic Contacts to AlGaAs/GaAs Heterostructures"
R.P. Taylor, P.T. Coleridge, Y. Feng, M. Davies, J. McCaffrey and P.A. Marshall
Journal of Applied Physics **76** 7966 (1994) (REFEREED)

49. "Demonstration of Intricate Gate, Ohmic and Interconnect Metallisations for Nanostructure Construction"
Y. Feng, **R.P. Taylor**, P.T. Coleridge, A.S. Sachrajda, M. Davies, P. Zawadski and J.P. McCaffrey
Proceedings of "The 7th International Conference on Superlattices, Microstructures

and Microdevices", Banff, Canada, 1994
Superlattices and Microstructures **15** 85 (1994) (REFEREED)

50. "A Tunable Ballistic Electron Cavity Exhibiting Geometry Induced Weak Localisation"
R.P. Taylor, R. Newbury, R.B. Dunford, P.T. Coleridge, A.S. Sachrajda and J.A. Adams
Proceedings of "The 7th International Conference on Superlattices, Microstructures and Microdevices", Banff, Canada, 1994
Superlattices and Microstructures **16** 317 (1994) (REFEREED)

51. "Classically, the Strangest of Things, When Quantum Dots are Quantum Rings"
A. Delage, Y. Feng, P.J. Kelly, A.S. Sachrajda and **R.P. Taylor**
Proceedings of The 5th conference on Quantum Well and Superlattice Physics, *LASE'93*, Los Angeles, USA, 1994
International Society for Optical Engineering **2139** 353 (1995) (REFEREED)

52. "Artificial Impurities in Quantum Wires and Dots"
A.S. Sachrajda, Y. Feng, G. Kirczenow, **R.P. Taylor**, B.L. Johnson, P.J. Kelly, P. Zawadski and P.T. Coleridge
Proceedings of the NATO Advanced Study Institute, Lucca, Italy, 1994
Quantum Transport in Ultra-small Devices, Plenum Press 133 (1995) (REFEREED)

53. "Artificial Impurities in Quantum Wires"
A.S. Sachrajda, Y. Feng, **R.P. Taylor**, G. Kirczenow, B.L. Johnson, P. Zawadski and P.T. Coleridge
Invited contribution, *Proceedings of The 22nd International Conference on the Physics of Semiconductors*, Vancouver, Canada, 1994
World Scientific (Ed. by D.Lockward) **2** 1815 (1995) (INVITED & REFEREED)

54. "The Quantum Hall Effect and Inter-edge State Tunnelling Within a Barrier"
B.L. Johnson, A.S. Sachrajda, G. Kirczenow, Y. Feng, **R.P. Taylor**, L. Henning, J. Wang, P. Zawadski and P.T. Coleridge
Physical Review B **51** 7650 (1995) (REFEREED)

55. "Classical and Weak Localisation Processes in a Tunable Ballistic Electron Cavity"
R.P. Taylor, R. Newbury, R.B. Dunford, P.T. Coleridge, A.S. Sachrajda and J.A. Adams
Physical Review B **51** 9801 (1995) (REFEREED)

56. "Fabrication of Nanostructures with Submicron Schottky and Ohmic Contacts"
Y. Feng, A.S. Sachrajda, P.T. Coleridge, **R.P. Taylor**, M. Davies and P.A. Marshall
Journal of Vacuum Science and Technology B **13** 2875 (1995) (REFEREED)

57. "Lead-induced Transition to Chaos in Ballistic Mesoscopic Billiards"
J.P. Bird, D.M. Olatona, R. Newbury, **R.P. Taylor**, K. Ishibashi, M. Stopa, Y. Aoyagi and T. Sugano
Physical Review B Rapid Communication **52** R14336 (1995) (REFEREED)

58. "Transition From Chaotic to Regular Quantum Scattering in Mesoscopic Billiards With Nominally Regular Geometry"
J.P. Bird, D.K. Ferry, G. Edwards, D.M. Olatona, R. Newbury, **R.P. Taylor**, K. Ishibashi Y. Aoyagi, T. Sugano and Y. Ochiai
Proceedings of "The 3rd International Symposium on New Phenomena in Mesoscopic Structures", Hawaii, USA 1995
Physica B **227** 148 (1996) (REFEREED)

59. "Investigations of Electron Interference and Quantum Chaos in Ballistic Quantum Dots with Square Geometry"
J.P. Bird, K. Ishibashi, R. Newbury, D.M. Olatona, **R.P. Taylor**, Y. Ochiai, Y. Aoyagi and T. Sugano
Proceedings of "The 7th Brazilian Workshop on Semiconductor Physics",

Rio de Janeiro, Brazil, 1995
Brazilian Journal of Physics **26** 1 (1996) (REFEREED)

60. "Geometry Induced Quantum Interference: a Continuous Evolution From Square to Sinai Billiard"
R.P. Taylor, R. Newbury, A.S. Sachrajda, Y. Feng, N. Zhu, H. Guo, P.T. Coleridge, A. Delage, P.J. Kelly, Z. Wasilewski and P. Zawadski
Proceedings of "NanoMes 96" (3rd International Symposium on Nanostructures and Mesoscopic Systems), Santa Fe, USA, 1996
Superlattices and Microstructures **20** 297 (1996) (REFEREED)

61. "The Topological Transition from a Corbino Disc to Hall Bar Geometry"
A.S. Sachrajda, Y. Feng, **R.P. Taylor**, R. Newbury and P.T. Coleridge
Proceedings of "NanoMes 96" (3rd International Symposium on Nanostructures and Mesoscopic Systems), Santa Fe, USA, 1996
Superlattices and Microstructures **20** 651 (1996) (REFEREED)

62. "The Role of Lead Openings in Regular Mesoscopic Billiards"
J.P. Bird, D.K. Ferry, R. Akis, R. Newbury, **R.P. Taylor**, D.M. Olatona, Y. Ochiai, K. Ishibashi, Y. Aoyagi and T. Sugano
Invited presentation in the proceedings of "NanoMes 96" (3rd International Symposium on Nanostructures and Mesoscopic Systems), Santa Fe, USA, 1996
Superlattices and Microstructures **20** 287 (1996) (REFEREED)

63. "The Transition from a Square to Sinai Billiard"
R.P. Taylor, R. Newbury, A.S. Sachrajda, Y. Feng, P.T. Coleridge, Z. Wasilewski N. Zhu and H. Guo
Proceedings of The 23rd International Conference on Semiconductor Physics, Berlin, Germany, 1996
World Scientific (Eds. M. Scheffler and R. Zimmermann) **2** 1549 (1996)
(NON-REFEREED)

64. "The Use of Wide Ballistic Cavities to Investigate Local Weak Localisation Processes Induced by Geometric Scattering"
R.P. Taylor, R. Newbury, A.S. Sachrajda, P.T. Coleridge, P. Zawadzki, R.B. Dunford, Y. Feng, J.P. Bird, C.R. Leavens, J.M. Cadogan, J.A. Adams, P.J. Kelly, M. Davies and S. Brown
Semiconductor Science and Technology **11** 1 (1996) (REFEREED)

65. "The Influence of Injection Properties on the Electron Scattering Dynamics of Ballistic Cavities"
R.P. Taylor, J.P. Bird and R. Newbury
The Journal of the Physical Society of Japan **65** 2730 (1996) (REFEREED)

66. "Can Ohmic Spikes Define Quantum Systems?"
R.P. Taylor, R. Newbury, A.S. Sachrajda, Y. Feng, P.T. Coleridge, M. Davies and J.P. McCaffrey
Proceedings of "The New Zealand and Australian Institutes of Physics Annual Condensed Matter Physics Meeting" (*Wagga 97*), Pakatoa Island, New Zealand, 1997
ISSN 1037-1214, page TM08, (1997) (UNREFEREED, EXTENDED ABSTRACT)

67. "Fractal Behaviour in the Magnetoresistance in a Sinai Billiard"
R. Newbury, **R.P. Taylor**, A.S. Sachrajda, Y. Feng, P.T. Coleridge, C. Dettmann and T.M. Fromhold
Proceedings of "The New Zealand and Australian Institutes of Physics Annual Condensed Matter Physics Meeting" (*Wagga'97*), Pakatoa Island, New Zealand, 1997
ISSN 1037-1214, page WM04, (1997) (UNREFEREED, EXTENDED ABSTRACT)

68. "Electron Behaviour In AlGaAs/GaAs Square Quantum Dots"

A.P. Micolich, **R.P. Taylor**, J.P. Bird and R. Newbury
Proceedings of "The New Zealand and Australian Institutes of Physics Annual Condensed Matter Physics Meeting" (*Wagga'97*), Pakatoa Island, New Zealand, 1997
ISSN 1037-1214, page TP20, (1997) (UNREFEREED, EXTENDED ABSTRACT)

69. "Aharonov-Bohm Oscillations in Quantum Dots: Precise Departures from h/e Periodicity"
J.P. Bird, M. Stopa, R. Newbury, **R.P. Taylor**, K. Ishibashi, Y. Aoyagi and T. Sugano
Proceedings of "The 8th International Conference on Superlattices, Microstructures and Microdevices", Liege, Belgium, 1996
Superlattices and Microstructures **22** 57 (1997) (REFEREED)

70. "Can Ohmic Spikes Define Quantum Systems?"
R.P. Taylor, R. Newbury, A.S. Sachrajda, Y. Feng, P.T. Coleridge, J.P. McCaffrey, M. Davies and J.P. Bird
Proceedings of "QDS'96" (1996 International Symposium on the Formation, Physics and Device Application of Quantum Dot Structures), Sapporo, Japan, 1996
Japanese Journal of Applied Physics **36** 3964 (1997) (REFEREED)

71. "Fractal Behaviour in the Magnetoresistance of Chaotic Billiards"
R. Newbury, **R.P. Taylor**, A.S. Sachrajda, Y. Feng, P.T. Coleridge, C. Dettmann and T.M. Fromhold
Proceedings of "QDS'96" (1996 International Symposium on the Formation, Physics and Device Application of Quantum Dot Structures), Sapporo, Japan, 1996
Japanese Journal of Applied Physics **36** 3991 (1997) (REFEREED)

72. "The Role of Electron Phase Coherence in Quantum Transport Through Open Ballistic Cavities"
J.P. Bird, A.P. Micolich, R. Akis, D.K. Ferry, R. Newbury, **R.P. Taylor**, D.M. Olatona, R. Wirtz, Y. Ochiai, K. Ishibashi, Y. Aoyagi and T. Sugano
Proceedings of "QDS'96" (1996 International Symposium on the Formation, Physics and Device Application of Quantum Dot Structures), Sapporo, Japan, 1996
Japanese Journal of Applied Physics **36** 3969 (1997) (REFEREED)

73. "Self-similar Magnetoresistance in a Semiconductor Sinai Billiard"
R.P. Taylor, R. Newbury, A.S. Sachrajda, Y. Feng, P.T. Coleridge, C. Dettmann, N. Zhu, H. Guo, A. Delage, P.J. Kelly and Z. Wasilewski
Physical Review Letters **78** 1952 (1997) (REFEREED) and *Nature* **386** 124 (1997)

74. "Quantum Transport in Open Mesoscopic Cavities"
J.P. Bird, R. Akis, D.K. Ferry, D.P. Piven, K. Connolly, **R.P. Taylor**, R. Newbury, D.M. Olatona, A.P. Micolich, R. Wirtz, Y. Ochiai, Y. Okubo, K. Ishibashi, Y. Aoyagi and T. Sugano
Invited contribution to *Chaos, Solitons and Fractals*, Pergamon/ Elsevier Press, (Ed. N. Nakamura) **8** 1299 (1997) (INVITED & REFEREED)

75. "Ohmic Contact Spike Arrays for Nanostructure Device Fabrication: Spike Distribution and Geometry Scattering of the Electron Wave Current"
R. Newbury, **R.P. Taylor**, A.S. Sachrajda, P.T. Coleridge, Y. Feng, M. Davies and J.P. McCaffrey
Proceedings of the Conference on Optoelectronic and Microelectronic Materials and Devices (COMMAD'96), Canberra, Australia, 1996
IEEE Journal ISBN 0-7803-3374-8/97 page 192 (1997) (REFEREED)

76. "Tunable Semiconductor Sinai Billiards"
R.P. Taylor, R. Newbury, A.S. Sachrajda, Y. Feng and P.T. Coleridge
Proceedings of the Conference on Optoelectronic and Microelectronic Materials and Devices (COMMAD'96), Canberra, Australia, 1996
IEEE Journal ISBN 0-7803-3374-8/97 page 171 (1997) (REFEREED)

77. "Correlation Analysis of Self-similarity in Semiconductor Billiards"

R.P. Taylor, A.P. Micolich, R. Newbury and T.M. Fromhold
Physical Review B Rapid Communications **56** R12733 (1997) (REFEREED)

78. "Fractal Transistors"
R.P. Taylor, A.P. Micolich, R. Newbury, C. Dettmann and T.M. Fromhold
Semiconductor Science and Technology **12** 1459 (1997) (REFEREED)

79. "Phase Breaking as a probe of the Intrinsic Level Spectrum of Open Quantum Dots"
J.P. Bird, H. Linke, J. Cooper, A.P. Micolich, D.K. Ferry, R. Akis, Y. Ochiai, **R.P. Taylor**, R. Newbury, P. Omling, Y. Aoyagi and T. Sugano
Proceedings of "The 10th International Conference on Hot Carriers in Semiconductors", Berlin, Germany, 1997
Physica Status Solidi B **204** 314 (1997) (REFEREED)

80. "Chaos in Modern Art?"
R.P. Taylor
Physics World, 76 (November 1997) (COMMISSIONED)

81. "Correlation Analysis of Statistical and Exact Self-similarity in Billiards"
A.P. Micolich, **R.P. Taylor**, R. Newbury, J.P. Bird , T.M. Fromhold and J. Cooper
Proceedings of "The New Zealand and Australian Institutes of Physics Annual Condensed Matter Physics Meeting", (*Wagga'98*), Wagga, Australia, 1998
ISSN 1037 1214, page TM11 (1998) (UNREFEREED, EXTENDED ABSTRACT)

82. "Fractional Brownian Statistics of Magneto-conductance Fluctuations"
A.P. Micolich, **R.P. Taylor**, R. Newbury and J.P. Bird
Proceedings of "The New Zealand and Australian Institutes of Physics Annual Condensed Matter Physics Meeting", (*Wagga'98*), Wagga, Australia, 1998
ISSN 1037 1214, page TP49 (1998) (UNREFEREED, EXTENDED ABSTRACT)

83. "Geometry-induced Fractal Behaviour in a Semiconductor Billiard"
A.P. Micolich, **R.P. Taylor**, R. Newbury, J.P. Bird, R. Wirtz, C.P. Dettmann, Y. Aoyagi and T. Sugano
Journal of Physics: Condensed Matter **10** 1339 (1998) (REFEREED)

84. "Fractals and Self-similarity in Mesoscopic Semiconductor Billiards"
A.P. Micolich, **R.P. Taylor**, R. Newbury, T.M. Fromhold and C.R. Tench
Australian and New Zealand Physicist **35** 151 (1998) (INVITED)

85. "Experimental and Theoretical Investigations of Clusters in the Magnetofingerprints of a Sinai Billiard"
R.P. Taylor, A.P. Micolich, R. Newbury, T.M. Fromhold, C. Dettmann and C.R. Tench
Proceedings of "The 2nd International Conference on Low Dimensional Structures and Devices", Lisbon, Portugal, 1997
Materials Science and Engineering B **51** 212 (1998) (REFEREED)

86. "Self-similar Conductance Fluctuations in a Sinai Billiard with a Mixed Chaotic Phase Space: Theory and Experiment"
T.M. Fromhold, C.R. Tench, **R.P. Taylor**, A.P. Micolich and R. Newbury
Proceedings of "The 12th International Conference on the Electronic Properties of Two Dimensional Systems", Tokyo, Japan, 1997
Physica B **249-251** 334 (1998) (REFEREED)

87. "Geometry-induced Fractal Behaviour: Fractional Brownian Motion in a Ballistic Mesoscopic Billiard"
A.P. Micolich, **R.P. Taylor**, R. Newbury, J.P. Bird, T.M. Fromhold, Y. Aoyagi and T. Sugano
Proceedings of "The 12th International Conference on the Electronic Properties of Two Dimensional Systems", Tokyo, Japan, 1997
Physica B **249-251** 343 (1998) (REFEREED)

88. "Wavefunction Scarring in Magneto-transport of Quantum Dots"
Y. Ochiai, Y. Okuba, N. Sasaki, J.P. Bird, K. Ishibashi, Y. Aoyagi, T. Sugano, A.P. Micolich, **R.P. Taylor**, R. Newbury, D. Vasileska, R. Akis and D.K. Ferry
Proceedings of "The 12th International Conference on the Electronic Properties of Two Dimensional Systems", Tokyo, Japan, 1997
Physica B **249-251** 353 (1998) (REFEREED)

89. "Experimental and Theoretical Investigations of Electron Dynamics in a Semiconductor Sinai Billiard"
A.P. Micolich, **R.P. Taylor**, R. Newbury, C. Dettmann and T.M. Fromhold
Australian Journal of Physics **51** 1 (1998) (REFEREED)

90. "Scale Factor Mapping of Statistical and Exact Self-similarity in Billiards"
A.P. Micolich, **R.P. Taylor**, J.P. Bird, R. Newbury, T.M. Fromhold, J. Cooper, Y. Aoyagi and T. Sugano
Proceedings of "The 2nd International Workshop on Surfaces and Interfaces of Mesoscopic Devices, Hawaii, USA, 1997
Semiconductor Science and Technology **13** 1 (1998) (REFEREED)

91. "Exact and Statistical Self-similarity in Magnetoconductance Fluctuations: a Unified Picture"
R.P. Taylor, A.P. Micolich, R. Newbury, J.P. Bird, T.M. Fromhold, J. Cooper, Y. Aoyagi and T. Sugano
Physical Review B Brief Reports, **58** 11107 (1998) (REFEREED)

92. "An Investigation of Current Injection Properties of Ohmic Spikes in Nanostructures"
R.P. Taylor, R. Newbury, A.S. Sachrajda, Y. Feng, P.T. Coleridge, M. Davies and J.P. McCaffrey
Proceedings of "The 8th International Conference on Superlattices, Microstructures and Microdevices", Liege, Belgium, 1996
Superlattices and Microstructures **24** (5) 337 (1998) (REFEREED)

93. "Mesoscopic Electron Transport"
R.P. Taylor,
Invited Review, *The Australian and New Zealand Physicist*, 35 183 (1998)
(INVITED AND UNREFEREED)

94. "Splashdown"
R.P. Taylor
New Scientist **2144** 30 (1998) (INVITED)

95. "Fractal Conductance Fluctuations in Mesoscopic Billiards: an Observation Over Three Orders of Magnitude"
R.P. Taylor, A.P. Micolich, R. Newbury, T.M. Fromhold and H. Linke
Proceedings of "The American Physical Society Annual Meeting", Atlanta, U.S.A., 1999
American Physical Society Bulletin, Centennial Meeting program,
DP01.185 (1999) (UNREFEREED, EXTENDED ABSTRACT)

96. "Experimental Quantum Ratchets Based on Nanostructures"
H. Linke, P.E. Lindelof, A. Lofgren, R. Newbury, P. Omling, W. Sheng, A. Svensson, **R.P. Taylor** and Hongqi Xu
Proceedings of "The American Physical Society Annual Meeting", Atlanta, U.S.A., 1999
American Physical Society Bulletin, Centennial Meeting program,
DP01.185 (1999) (UNREFEREED, EXTENDED ABSTRACT)

97. "Fractal Magneto-conductance in Mesoscopic Billiards: Temperature and Size Dependence"
A.P. Micolich, **R.P. Taylor**, J.P. Bird , R. Newbury, Y. Aoyagi and T. Sugano

Proceedings of "The New Zealand and Australian Institutes of Physics Annual Condensed Matter Physics Meeting", (*Wagga'99*), Wagga, Australia, 1999
ISSN 1037-1214, Page TM8, (1999) (UNREFEREED, EXTENDED ABSTRACT)

98. "Physical Realisation of Weierstrass Scaling in Soft-wall Antidot Billiards"
A.P. Micolich, **R.P. Taylor**, T.M. Fromhold, C.R. Tench and R. Newbury
Proceedings of "The New Zealand and Australian Institutes of Physics Annual Condensed Matter Physics Meeting", (*Wagga'99*), Wagga, Australia, 1999
ISSN 1037-1214, Page WP14, (1999) (UNREFEREED, EXTENDED ABSTRACT)

99. "Examination of the 0.7(2e2/h) Feature in the Quantised Conductance of a Quantum Point Contact: Varying the Effective g-Factor with Hydrostatic Pressure"
R. Wirtz, J.T. Nichols, **R.P. Taylor**, R. Newbury, W.R. Tribe and M. Y. Simmons
Proceedings of "The New Zealand and Australian Institutes of Physics Annual Condensed Matter Physics Meeting", (*Wagga'99*), Wagga, Australia, 1999
ISSN 1037-1214, Page WP10, (1999) (UNREFEREED, EXTENDED ABSTRACT)

100. "Unification of Exact and Statistical Self-similarity in Semiconductor Billiards"
R.P. Taylor, A.P. Micolich, T.M. Fromhold, C.R. Tench, R. Newbury, J.P. Bird, J. Cooper Y. Aoyagi and T. Sugano
Proceedings of The 24th International Conference on the Physics of Semiconductors, Jerusalem, Israel, 1998
World Scientific (available on CDROM, Chapter 7, A14 (1999)) (UNREFEREED)

101. "Physical Realisation of Weierstrass Scaling using a Quantum Interferometer"
A.P. Micolich, **R.P. Taylor**, T.M. Fromhold, C.R. Tench and R. Newbury
Proceedings of "The 11th International Conference on Superlattices, Microstructures and Microdevices", Hurgarda, Egypt, 1998
Superlattices and Microstructures **25** 207 (1999) (REFEREED)

102. "Temperature Dependence of the Fractal Dimension of Magneto-conductance Fluctuations in a Mesoscopic Semiconductor Billiard"
A.P. Micolich, **R.P. Taylor**, J.P. Bird, R. Newbury, Y. Aoyagi and T. Sugano
Proceedings of "The 11th International Conference on Superlattices, Microstructures and Microdevices", Hurgarda, Egypt, 1998
Superlattices and Microstructures **25** 157 (1999) (REFEREED)

103. "Scale Factor Mapping of Self-similarity in Semiconductor Billiards"
R.P. Taylor, A.P. Micolich, R. Newbury, T.M. Fromhold, C.R. Tench, J.P. Bird and J. Cooper
Proceedings of "The 1998 Conference on Optoelectronic and Microelectronic Materials and Devices", Perth, Australia.
IEEE Journal ISBN 0-7803-4513-4, 475 (1999) (REFEREED)

104. "Temperature Dependent Fractal Electron Transmission in Mesoscopic Billiards"
A.P. Micolich, **R.P. Taylor**, J.P. Bird, R. Newbury, Y. Aoyagi and T. Sugano
Proceedings of "The 1998 Conference on Optoelectronic and Microelectronic Materials and Devices", Perth, Australia.
IEEE Journal ISBN 0-7803-4513-4, 471 (1999) (REFEREED)

105. "Physical Realisation of Weierstrass Scaling in a Soft-wall Antidot Billiard"
A.P. Micolich, **R.P. Taylor**, T.M. Fromhold, C.R. Tench and R. Newbury
Proceedings of "The 1998 Conference on Optoelectronic and Microelectronic Materials and Devices", Perth, Australia.
IEEE Journal ISBN 0-7803-4513-4, 468 (1999) (REFEREED)

106. "Observation of Fractal Conductance Fluctuations over Three Orders of Magnitude"
R.P. Taylor, A.P. Micolich, R. Newbury, T.M. Fromhold and C.R. Tench
Proceedings of "The 8th Gordon Godfrey Workshop on Condensed Matter Physics",

Sydney, Australia, 1998
Australian Journal of Physics, **52** 887 (1999) (REFEREED)

107. "Chaotic Ray Dynamics and Fast Optical Switching in Micro-cavities with a Graded Refractive Index"
P.B. Wilkinson, T.M. Fromhold, C.R. Tench, **R.P. Taylor**, A.P. Micolich and R. Newbury
Proceedings of "The 11th International Conference on Hot Carriers in Semiconductors"
Kyoto, Japan, July 1999.
Physica B **272** 484 (1999) (REFEREED)

108. "Voltage and Temperature Limits for the Operation of a Quantum Dot Ratchet"
H. Linke, Hongqi Xu, A. Lofgren, Weidong Sheng, A. Svensson, P. Omling, P.E. Lindelof, R. Newbury and **R.P. Taylor**
Proceedings of "The 11th International Conference on Hot Carriers in Semiconductors"
Kyoto, Japan, July 1999.
Physica B **272** 61 (1999) (REFEREED)

109. "Comment on Fractal Conductance Fluctuations in a Soft Wall Stadium and a Sinai Billiard"
R.P. Taylor, A.P. Micolich, T.M. Fromhold and R. Newbury
Physical Review Letters **83** (5) 1074 (1999) (REFEREED)

110. "Experimental Tunnelling Ratchet"
H. Linke, T.E. Humphrey, A. Lofgren, A.O. Sushkov, R. Newbury, **R.P. Taylor** and P. Omling
Science **286** 2314 (1999) (REFEREED)

111. "Greater Neuronal Cell Density Occurs in Females in the Language-associated Planum Temporale"
J.A. Harasty, G.M. Halliday, X. Phung and **R.P. Taylor**
Published: *Proceedings of the Australian Neuroscience Society* **10** 53
1SBN 1034 1034-3237 (1999)
(UNREFEREED, EXTENDED ABSTRACT)

112. "Fractal Analysis of Pollock's Drip Paintings"
R.P. Taylor, A.P. Micolich and D. Jonas
Nature **399** 422 (1999) (REFEREED)

113. "Fractal Expressionism: A Scientific Analysis of Jackson Pollock's Drip Paintings"
R.P. Taylor, A.P. Micolich and D. Jonas
Pass Magazine (University of Cambridge, http://www.pass.maths.org.uk

114. "The Story of a Chaotic Pendulum: Where Science and Art Meet"
R.P. Taylor, A.P. Micolich and D. Jonas
The Physicist **36** (3) 93 (1999) (cover picture and feature article) (INVITED)

115. "Fractal Expressionism: A Scientific Analysis of Jackson Pollock's Drip Paintings"
R.P. Taylor, A.P. Micolich and D. Jonas
Physics World, 25 (October 1999) (cover picture and feature article) (INVITED)

116. "Tunnelling Ratchets"
T.E. Humphrey, H. Linke, A. Lofgren, R. Newbury, P. Omling, A. Sushkov and **R.P. Taylor**
Proceedings of "The American Physical Society Annual Meeting", Minneapolis, U.S.A., 2000
American Physical Society Bulletin, **45** 861, 2000 (UNREFEREED, EXTENDED ABSTRACT)

117. "Tunnelling Ratchets"
T. E. Humphrey, H. Linke, A. Löfgren, R. Newbury, P. Omling, A. Sushkov, and **R.P. Taylor**
Proceedings of "The New Zealand and Australian Institutes of Physics Annual Condensed Matter Physics Meeting", (*Wagga'2000*), Wagga, Australia, 2000)
(UNREFEREED, EXTENDED ABSTRACT)

118. "A Physical Explanation for the Origin of Self-similar Magnetoconductance Fluctuations in Semiconductor Billiards"
C.R. Tench, T.M. Fromhold, P.B. Wilkinson, M.J. Carter, **R.P. Taylor,** A.P. Micolich and R. Newbury
Proceedings of "The 9th International Conference on Modulated Semiconductor Systems" Fukuoka, Japan, July, 1999
Physica E **7** 726 (2000) (REFEREED)

119. "Temperature and Size Dependence of Fractal MCF in Semiconductor Billiards"
A.P. Micolich, **R.P. Taylor**, J.P. Bird, R. Newbury, H. Linke, Y. Aoyagi and T. Sugano
Proceedings of "The 3nd International Conference on Low Dimensional Structures and Devices", Antalya, Turkey, 1999.
Microelectronics Engineering **51-52** 241 (2000) (REFEREED)

120. "An Investigation of Weierstrass Self-similarity in a Semiconductor Billiard"
A.P. Micolich, **R.P. Taylor**, R. Newbury, T.M. Fromhold and C.R. Tench
Europhysics Letters **49** 417 (2000) (REFEREED)

121. "Using Science to Investigate Jackson Pollock's Drip Paintings"
R.P. Taylor, A.P. Micolich and D. Jonas
Invited contribution to "Art and the Brain", *Journal of Consciousness Studies* **7** (8-9) 137 (2000) (INVITED & REFEREED)

122. " Jackson Pollock: Nature, Chaos and Fractals"
R.P. Taylor
Thesis, Art Theory, University of New South Wales (1999) (REFEREED)

123. "Stacked Billiards: Examining the Effect of Soft-wall Potential Profile on Fractal Conductance Fluctuations"
A.P. Micolich, **R.P. Taylor**, A.G. Davies, J.P. Bird, R. Newbury, T.M. Fromhold, A. Ehlert, H. Linke, L.D. Macks, W.R. Tribe, E.H. Linfield and D. A. Ritchie
Proceedings of "The American Physical Society Annual Meeting", Seattle, U.S.A., 2001
American Physical Society Bulletin, 2001 (UNREFEREED, EXTENDED ABSTRACT)

124. "The Evolution of Fractal Patterns During a Classical-Quantum Transition"
R.P. Taylor, A.P. Micolich, R. Newbury, A. Ehlert, A.G. Davies, L.D. Macks, H. Linke, T.M. Fromhold, W.R. Tribe, E.H. Linfield and D. A. Ritchie
Proceedings of "The American Physical Society Annual Meeting", Seattle, U.S.A., 2001
American Physical Society Bulletin, 2001 (UNREFEREED, EXTENDED ABSTRACT)

125. "Semiconductor Billiards: a Controlled Environment to Study Fractals"
R.P. Taylor, A.P. Micolich, R. Newbury , T.M. Fromhold, A. Ehlert , A.G. Davies, L.D Macks, C.R. Tench, J.P. Bird, R. H. Linke, W.R. Tribe, E.H. Linfield and D.A. Ritchie
Physica Scripta **T90** 41 (2001) (REFEREED)

126. "Electron Tunnelling Ratchets"
H. Linke, P. Omling, T.E. Humphrey, A. Lofgren, R. Newbury, A.O. Sushkov and **R.P. Taylor**
Springer Proceedings in Physics Physics of Semiconductors, **87** 1009-1012 (2001) (INVITED & REFEREED)

127. "Chaos in Quantum Ratchets"
H. Linke, T.E. Humphrey, **R.P. Taylor** and R. Newbury
Physica Scripta **T90** 54 (2001) (REFEREED)

128. "Electromagnetic Wave Chaos in Gradient Refractive Index Optical Cavities"
P.B. Wilkinson, T.M. Fromhold, **R.P. Taylor** and A.P. Micolich
Physical Review Letters **86** 5466 (2001) (REFEREED)

129. "The Evolution of Fractal Patterns during a Classical-Quantum Transition"

A.P. Micolich, **R.P. Taylor**, A.G. Davies, J.P. Bird, R. Newbury, T.M. Fromhold, A. Ehlert, H. Linke, L.D Macks, W.R. Tribe, E.H. Linfield, D.A. Ritchie, J. Cooper, Y. Aoyagi and P.B. Wilkinson
Physical Review Letters **87** 036802 (2001) (REFEREED)

130. "A Compact Fourth-Order Finite Difference Method For Solving Differential Equations"
P.B. Wilkinson, T.M. Fromhold, C. R. Tench**, R.P. Taylor** and A.P. Micolich
Physical Review E **64** 047701-1-4 (2001) (REFEREED)

131. "Effects of Geometric Wave Chaos on the Electromagnetic Eigenmodes of Gradient-index Optical Cavity"
P.B. Wilkinson, T.M. Fromhold, **R.P. Taylor** and A.P. Micolich
Physical Review E **64** 026203 (2001) (REFEREED)

132. "Semiconductor Billiards: a Controlled Environment to Study Fractals"
R.P. Taylor, A.P. Micolich, R. Newbury, T.M. Fromhold, A. Ehlert , A.G. Davies, L.D Macks, C.R. Tench, J.P. Bird, R. H. Linke, W.R. Tribe, E.H. Linfield and D.A. Ritchie
Invited contribution to the Nobel Foundation book *Y2K Quantum Chaos*, World Scientific (Singapore) (ISBN 981 02 4711-7) and The Royal Swedish Academy of Sciences, 41 (2001) (INVITED)

133. "Architect Reaches for the Clouds"
R.P. Taylor
Nature **410** 18 (2001) (COMMISIONED)

134. "From Science To Art and Back"
R.P. Taylor
Science on line: http://nextwave.sciencemag.org/cgi/content/full/2001/04/25/1 (2001) (INVITED CAREER ESSAY)

135. "Fractals: A Resonance Between Art and Nature"
R.P. Taylor, B.R. Newell, B. Spehar and C.W.G. Clifford
Invited contribution to proceedings of "The 5th International Conference on the Interdisciplinary Study of Symmetry (ISIS)", Sydney 2001.
Symmetry: Art and Science, ISIS Journal (ISBN 865-4824)
1-2, 194 (2001) (INVITED EXTENDED ABSTRACT)

136. "The Dependence of Fractal Conductance Fluctuations on Soft-wall Profile in a Double-2DEG Billiard"
A.P. Micolich, **R.P. Taylor**, A.G. Davies, T.M. Fromhold, R. Newbury, A. Elhert, H. Linke, L.D Macks, W.R. Tribe, E.H. Linfield and D.A. Ritchie
Proceedings of "The 14th International Conference on the Physics of Two Dimensional Systems", Prague, Czech Republic, July 2001.
Physica E **12** 841 (2002) (REFEREED)

137. "Discrete Energy Level Spectrum Dependence of Fractal Conductance Fluctuations in Semiconductor Billiards"
A.P. Micolich, **R.P. Taylor**, A.G. Davies, J.P. Bird, A. Ehlert, T.M. Fromhold, R. Newbury, H. Linke, L.D Macks, W.R. Tribe, E.H. Linfield and D.A. Ritchie
Proceedings of "The 10th International Conference on Modulated Semiconductor Structures", Linz, Austria, July 2001
Physica E **13** 683-686 (2002) (REFEREED)

138. "The Dependence of Fractal Conductance Fluctuations on Semiconductor Billiard Parameters"
A.P. Micolich, **R.P. Taylor**, R. Newbury, J.P. Bird, T.M. Fromhold, A.G. Davies, A. Elhert, L.D Macks, W.R. Tribe, H. Linke, E.H. Linfield, D.A. Ritchie, J. Cooper and Y. Aoyagi
Proceedings of "The 12th International Conference on Nonequilibrium Carrier Dynamics in Semiconductors (HCIS-12)"
Physica B **314** 477 (2002) (REFEREED)

139. "Quantum Ratchets Act as Quantum Heat Pumps"
H. Linke, T.E. Humphrey, **R.P. Taylor**, A.P. Micolich and R. Newbury
Proceedings of the 12th International Conference on Nonequilibrium Carrier Dynamics in Semiconductors (HCIS-12).
Physica B **314** 464 (2002) (REFEREED)

140. "Quantum Ratchets and Quantum Heat Pumps"
H. Linke, T.E. Humphrey, P.E. Lindelof, A. Loffgren, R. Newbury, P. Omling, A.O. Sushkov, **R.P Taylor** and H. Xu
Applied Physics A **75** 237 (2002) (REFEREED)

141. "The Dependence of Fractal Conductance Fluctuations on Soft-wall Profile in a Double-layer Billiard"
A.P. Micolich, **R.P. Taylor**, A.G. Davies, T.M. Fromhold, H. Linke, R. Newbury, A. Elhert, L.D Macks, W.R. Tribe, E.H. Linfield and D.A. Ritchie
Applied Physics Letters **80** 4381 (2002) (REFEREED)

142. "Reversible Quantum Brownian Heat Engines for Electrons"
T.E. Humphrey, R. Newbury, **R.P Taylor** and H. Linke
Physical Review Letters **89** 116801 (2002) (REFEREED)

143. "Dependence of Fractal conductance Fluctuations on Semiconductor Billiard Parameters"
A.P. Micolich, **R.P. Taylor**, R. Newbury, J.P. Bird, T.M. Fromhold, A.G. Davies, L.D Macks, A. Elhert, H. Linke, W.R. Tribe, E.H. Linfield, D.A. Ritchie, J. Cooper and Y. Aoyagi
Proceedings of "The Australian Institute of Physics Congress", Sydney, July 2002.
"15th Biennial Congress", Australian Institute of Physics, 367 (2002) (REFEREED)

144. "Pollock's Fractals Unite Art and Science"
R.P. Taylor
Proceedings of the Sigma Xi Forum, Raleigh, USA, 2001.
American Scientist, June/July Issue 2002 (UNREFEREED, EXTENDED ABSTRACT)

145. "The Construction of Pollock's Fractal Drip Paintings"
R.P.Taylor, A.P.Micolich and D.Jonas
Leonardo **35** 203-7 (2002) (REFEREED)

146. "Spotlight on a Visual Language"
R.P. Taylor
Nature **415** 961 (2002) (INVITED)

147. "Fractal Design Strategies For Enhancement of Knowledge Work Environments"
J.A. Wise and **R.P. Taylor**
Published: Proceedings of "The Human Factors and Ergonomics Society Meeting (2002)", Baltimore, October 2002 CROM published by The Human Factors and Ergonomics Society, **46** 854-858 (2002) (REFEREED)

148. "Order in Pollock's Chaos"
R.P. Taylor
Scientific American, **287** 116-121 December 2002 (COMMISSIONED)

149. "Ordine nel caos di Pollock"
R.P. Taylor
Le Scienze, **413** 88 (2002) (INVITED)

150. "Fractal Conductance Fluctuations in "Hard-wall" InGaAs/InP Billiards"
C. Marlow, **R.P. Taylor**, H. Linke and T. Martin
Proceedings of the Annual American Physical Society Meeting, Austin Texas, March 2003.
Bulletin of the American Physical Society **48** 101 (2003)
(UNREFEREED, EXTENDED ABSTRACT)

151. "Fractal conductance Fluctuations in single and double-layer billiards"
R.P. Taylor, A.P. Micolich, H. Linke, A.G. Davies, T.M. Fromhold, R. Newbury, A. Elhert, L.D Macks, W.R. Tribe, E.H. Linfield and D.A. Ritchie
Proceedings of "The 26th International Conference on the Physics of Semiconductors", Edinburgh, July 2002
Institute of Physics Conference Series **171** (2003) (available on CD) (REFEREED)

152. "A Review of Fractal Conductance Fluctuations in Ballistic Semiconductor Devices"
R.P. Taylor, R. Newbury, A.P. Micolich, T.M. Fromhold, H. Linke, A.G. Davies, T.P. Martin and C. Marlow
Invited chapter to the book *Electron Transport in Quantum Dots*, Ed. J.P. Bird, Kluwer Academic/Plenum (2003) (INVITED)

153. "Generic Fractal Behaviour of Ballistic Devices"
R.P. Taylor, R. Newbury, A.P. Micolich, A.G. Davies, T.M. Fromhold, H. Linke, L.D Macks, W.R. Tribe, E.H. Linfield, D.A. Ritchie and T.P. Martin
Proceedings of The 2002 Conference on Optoelectronic and Microelectronic Materials and Devices, 394, Ed. M. Gal, Spinning Head Publications ISBN 0-7803-7571-8 (2003) (INVITED & REFEREED)

154. "Geometry Independence of Fractal Ballistic Processes"
R.P. Taylor, T.P. Martin, A.P. Micolich, H. Linke, A.G. Davies, R. Newbury, and E.H. Linfield
Proceedings of "NanoMes 2003", Tempe, February 2003.
Physica **E19** 225 (2003) (REFEREED)

155. "The Influence of Confining Wall Profile on Quantum Interference Effects in Etched GaInAs/InP Billiards"
T.P. Martin, C.A. Marlow, **R.P. Taylor**, H. Linke, G.D.R.Hall, I. Shorubalko, I. Maximov, W. Seifert, L. Samuelson, and T.M. Fromhold
Superlattices and Microstructures, **34** 179 (2003) (REFEREED)

156. "Surviving Conduction Symmetries in Non-linear Response"
C.A. Marlow, A.Lofgren, I. Shorubalko, **R.P. Taylor**, L. Samuelson and H. Linke,
Superlattices and Microstructures **34** 173 (2003) (REFEREED)

157. "Fractal Expressionism - Where Art Meets Science"
R.P. Taylor
Invited Chapter to the book *Art and Complexity*, Ed. J. Casti and A. Karlqvist, Elsevier Science, Amsterdam (2003) (INVITED)

158. "Pollock's Fractals "
R.P. Taylor
Letter, *Scientific American*, 6th April 2003 (INVITED)

159. "Second Nature: Fractured Magic from Pollock to Gehry"
R.P. Taylor
Chapter to the book *Innovations,* Papadakis Publishing, London, 2003
Also published in *Newarch*, **7**, 16 (2003) (INVITED).

160. "Second Nature: Fractured Magic from Pollock to Gehry"
R.P. Taylor
Newarch, **7**, 16 (2003) (INVITED).

161. "Universal Aesthetic of Fractals"
B. Spehar, C.W.G. Clifford, B.R. Newell and **R.P. Taylor**
Chaos and Graphics, Elsevier Press, **27** 813 (2003) (REFEREED)

162. "The Visual Complexity of Pollock's Dripped Fractals"

R.P. Taylor, B. Spehar, C.W.G. Clifford and B.R. Newell.
Proceedings of "The International Conference on Complex Systems (2002)",
New Hampshire, July 2002 (New England Institute of Complexity, 2003) (REFEREED)

163. "Three Key Questions on Fractal Conductance Fluctuations: Dynamics, Quantization and Coherence"
A.P. Micolich, **R.P. Taylor,** T.P. Martin, R. Newbury, T.M. Fromhold,
A.G. Davies, H. Linke, W.R. Tribe, L.D. Macks, C.G. Smith, E.H. Linfield and D.A. Ritchie.
Physical Review B **70** 085302 (2004) (REFEREED)

164. "Three Key Questions on Fractal Conductance Fluctuations: Dynamics, Quantization and Coherence"
A.P. Micolich, **R.P. Taylor,** T.P. Martin, R. Newbury, T.M. Fromhold,
A.G. Davies, H. Linke,
W.R. Tribe, L.D. Macks, C.G. Smith, E.H. Linfield and D.A. Ritchie.
The Virtual Journal of Nanoscale Science and Technology (American Physical Society),
10, (August 24th 2004) (www.vjnano.org).

165. "Symmetry of Two Terminal Nonlinear Electric Conduction"
A. Lofgren, C.A Marlow, I. Shorubalko, **R.P. Taylor,** L. Samuelson and H. Linke,
Physical Review Letters **92** 046803-1 (2004) (REFEREED)

166. "Fractal Dimension of Landscape Silhouette as a Predictor of Landscape Preference"
C.M. Hagerhall, T. Purcell and **R.P. Taylor**,
Journal of Environmental Psychology **24** 247(2004) (REFEREED)

167. "Pollock, Mondrian and Nature: Recent Scientific Investigations"
R.P. Taylor
"Chaos and Complexity in Arts and Architecture", a special edition of
Chaos and Complexity Letters, **1** *29 (2004)* (INVITED And REFEREED)

168. "Splatter Matters: How to Tell a Real Pollock from a Fake"
R.P. Taylor
The Fabulous Fifties (The American Music Institute), 29 (2004) (INVITED)

169. "Evidence for mechanical copying and enlarging in Jan van Eyck's
Portrait of Niccolo Albergati",
R.P. Taylor,
Side-bar to D. Stork's article, "Optics and Realism in Renaissance Art", *Scientific American*,
December 2004

170. "Feel the Fascination of Fractals"
R.P. Taylor,
Invited Review, *Physics World*, December 2004 (INVITED)

171. "Levy Flights"
R.P. Taylor
Invited Essay in the *Encyclopedia of Non-linear Science*, Ed. Alywn Scott,
Fitzroy-Dearborn, London, (2005) (ISBN 1-57958-385-7) (INVITED)

172. "Fractal Study of Coupling Transitions in Ballistic Quantum Dot Arrays"
T.P. Martin, **R.P. Taylor**, H. Linke, B. Murray, C. Arndt, N. Aoki, D. Oonishi, Y. Iwase
and Y. Ochiai.
The Proceedings of "The 27th International Conference on Physics and Semiconductors",
Flagstaff, USA July 2004, *AIP Conference Proceedings* (ISBN 0-7354-0257-4) **772** 823 (2005)
(UNREFEREED).

173. "Preserved Symmetries of Non-linear Electronic Conduction"
C.A. Marlow, A.Lofgren, I. Shorubalko, **R.P. Taylor**, L. Samuelson and H. Linke,
The Proceedings of "The 27th International Conference on Physics and Semiconductors",
Flagstaff, USA July 2004, *AIP Conference Proceedings* (ISBN 0-7354-0257-4) **772** 1257-1258 (2005)
(UNREFEREED).

174. "Perceptual and Physiological Response to the Visual Complexity of Fractals"
R.P. Taylor, B. Spehar, J.A. Wise, C.W.G. Clifford, B.R. Newell, C.M. Hagerhall, T. Purcell and T.P. Martin
The Journal of Nonlinear Dynamics, Psychology, and Life Sciences, **9** 89 (2005) (REFEREED)

175. "Fractal Aesthetics"
R.P. Taylor,
The Journal of Nonlinear Dynamics, Psychology, and Life Sciences
9 115-6 (2005) (INVITED)

176. "Fractals: A Resonance Between Art and Nature"
R.P. Taylor, B. Newell, B. Spehar and C. Clifford
Invited chapter to the book *Mathematics and Culture II: Visual Perfection: Mathematics and Creativity,* Ed. M. Emmer, (Springer-Verlag, Berlin, 2005) (INVITED)

177. "Alla Ricerca Di Arte Frattale Che Riduce Lo Stress: Di Jackson Pollock A Frank Gehry"
R.P. Taylor
Invited chapter to the book *Mathematics and Culture*, 247-255, Springer-Verlag, Milano, (2005) (INVITED)

178. "Fractal Aesthetics II"
R.P. Taylor,
The Journal of Nonlinear Dynamics, Psychology, and Life Sciences
9(2), cover image (2005) (INVITED)

179. "Fractal Aesthetics III"
R.P. Taylor,
The Journal of Nonlinear Dynamics, Psychology, and Life Sciences
9(3), cover image (2005) (INVITED)

180. "Fractal Aesthetics IV"
R.P. Taylor,
The Journal of Nonlinear Dynamics, Psychology, and Life Sciences
9(4), cover image (2005) (INVITED)

181. "Jackson Pollock's Fractal Patterns: Authenticating Art with Nature's Geometry"
R.P. Taylor
Proceedings of International Conference on Art and Mathematics, University of Colorado, Boulder, USA, June 5th-10th, 2005 (INVITED)

182. "A Novel Quantum Interference Probe of the Energy Spectrum of Coupled Nanodevices"
T.P. Martin, **R.P. Taylor**, H. Linke, N. Aoki, D. Oonishi, Y. Iwase and Y. Ochiai.
Proceedings of "2nd International Conference on Advanced Materials and Nanotechnology" Queenstown, New Zealand, 6-11th February, 2005.
Current Applied Physics (Elsevier) **6** 541-544 (2006) (REFEREED).

183. "Fractal patterns and attention restoration - Evaluations of real and artificial landscape silhouettes"
C.M. Hagerhall, T. Laike, Thorbjörn, R.P. Taylor, M. Kuller, LU Rikard and T. Martin.
Proceedings In *Environment Health and Sustainable Development (IAPS 19 Conference Proceedings* (2006).

184. "Series Summation of Fractal Fluctuations in Electron Billiard Arrays"
T.P. Martin, B.C. Scannell, C.A. Marlow, **R.P. Taylor**, H. Linke,. I. Shorubalko, L. Samuelson.
Proceedings of "The 16th International Conference on the Electronic Properties of Two Dimensional Systems", Albuquerque, USA, July 10th-16th, 2005.

Physica E **34** 600-603 (2006) (REFEREED)

185. "Self-Propelled Film-boiling Liquids"
H. Linke, B.J. Aleman, L. D. Melling, M.J. Taormina, M. Francis, C.C. Dow-Hygelund, V. Narayanan, **R.P. Taylor,** A. Stout and G. Engelking
Physical Review Letters **96** 154502 (2006) (REFEREED)

186. "Experimental Investigation of the Breakdown of the Onsager-Casimir Relations"
C. A. Marlow, **R.P. Taylor,** M. Fairbanks, I. Shorubalko, and H. Linke,
Physical Review Letters **96** 116801 (2006) (REFEREED)

187. "Experimental Investigation of the Breakdown of the Onsager-Casimir Relations"
C. A. Marlow, **R.P. Taylor,** M. Fairbanks, I. Shorubalko, and H. Linke,
Virtual Journal of Nanoscale Science and Technology, American Institute of Physics and American Physical Society, 4/3/2006

188. "Symmetry of Magnetoconductance Fluctuations of Quantum Dots in the Nonlinear Response Regime."
A. Lofgren, C. A. Marlow, T.E. Humphrey, I. Shorubalko, **R.P. Taylor,** P. Omling, R. Newbury, P.E. Lindelof, and H. Linke,
Physical Review B **73**, 235321 (2006*)* (REFEREED)

189. "A Unified Model of Electron Quantum Interference For Ballistic and Diffusive Semiconductor Devices"
C.A. Marlow, **R.P. Taylor**, T.P. Martin, B.C. Scannell, H. Linke, M.S. Fairbanks, I. Shorubalko, L. Samuelson, T.M. Fromhold, C.V. Brown, B. Hackens, S. Faniel, C. Gustin, V. Bayot, X. Wallart, S. Bollaert and A. Cappy
*Physical Review **B*** **73** 195318-1-7 (2006*)* (REFEREED)

190. "Non-linear Effects on Quantum Interference in Electron Billiards"
C.A. Marlow, **R.P. Taylor**, M. Fairbanks and H. Linke
Proceedings of "The 14th International Conference on Non-equilibrium Carrier Dynamics in Semiconductors" Chicago, USA, July 24th-29th, 2005
Springer Proceedings in Physics series, **110,** ISBN 978-3-540-36587
Eds: M. Saraniti and U. Ravaioli (2006) (REFEREED).

191. "The Breakdown of the Onsager-Casimir Relations in Electron Billiards"
C. A. Marlow, M. Fairbanks, **R.P. Taylor,** I. Shorubalko, and H. Linke,
Proceedings of the 28th International Conference on the Physics of Semiconductors July 24th-28th, 2006 (UNREFEREED).

192. "The Search for Stress-Reducing Art: Fractal Geometry from Jackson Pollock to Frank Gehry"
R.P. Taylor
Invited chapter to the book *Mathematics and Culture* V, 239-246, Springer-Verlag, (2006) (INVITED).

193. "Reduction of Physiological Stress Using Fractal Art and Architecture"
R.P. Taylor
Leonardo **39**, 245 (2006). (INVITED AND REFEREED),

194. "A Concrete Example"
J.P. Boon, J. Casti, C. Djerassi, J. Johnson, A. Lovett, T. Norretranders, V. Patera, C. Sommerer, **R.P. Taylor** and S. Thurner
Nature **444** 122 (2006) (INVITED).

195. "Personal Reflections on Pollock's Fractal Paintings"
R.P. Taylor
Invited essay, special edition of the Journal *History, Science and Health,* **13** 108-23 (2006) (INVITED).

196. "Reflexoes Pessoais Sobre as Pinturas Fractais de Jackson Pollock"
R.P. Taylor
Invited essay, *Historia, Ciencias, Saude-Manguinhos*
13 108-23 (2006) (INVITED).

197. "Pollock's Patterns: Recent Developments"
T.P. Martin, B.C. Scannell, M.S. Fairbanks, **R.P. Taylor**, A.P. Micolich and D. Jonas
Fractals Research (2006) ISBN: 0-9791874-2-7 (REFEREED)

198. "Revisiting Pollock's Poured Paintings"
R.P. Taylor, A.P. Micolich and D. Jonas
Nature, Communications Arising, **44** doi:10:1038/nature05399 (2006) (REFEREED)

199. "Positive Impacts of Fractal Patterns on Human Physiology – Key Experiments"
R.P. Taylor, Technical document
Fractals Research (2006), ISBN: 0-9791874-0-0

200. "Chaos, Fractals, Nature"
R.P. Taylor, book (limited printed edition)
Fractals Research (2006) ISBN: 0-9791874-1-9

201. "Semantic Evaluations of Silhouettes with Different Fractal Dimensions"
C.M. Hagerhall, T. Laike, **R.P. Taylor,** M. Küller, R. Küller and T.P Martin
2nd International Nonlinear science Conference Proceedings (2006) (REFEREED).

202. "Authenticating Pollock Paintings with Fractal Geometry"
R.P. Taylor, R. Guzman, T.M. Martin, G. Hall, A.P. Micolich, D. Jonas, B.C. Scannell
M.S. Fairbanks and C.A Marlow
Pattern Recognition Letters **28** 695 (2007) (INVITED AND REFEREED)

203. "Blood Sweat and Electronics"
R.P. Taylor
The Press, September 18th, (2007) (INVITED).

204. "Quantum Conductance Fluctuations in Nano-scale Devices"
B.C. Scannell, T.P. Martin, M.S. Fairbanks, H. Linke and **R.P. Taylor**
Proceedings of "3nd International Conference on Advanced Materials and Nanotechnology"
Wellington, New Zealand, 6-11th February, 2007.
Current Applied Physics **8** 332 (2008) (Elsevier) (REFEREED).

205. "Non-linear Characteristics in the Magnetoconductance of Electron Billiards"
M. Fairbanks ,C.A. Marlow, **R.P. Taylor,** and H. Linke
Proceedings of "3nd International Conference on Advanced Materials and Nanotechnology"
Wellington, New Zealand, 6-11th February, 2007.
Current Applied Physics **8** 340 (2008) (Elsevier) (REFEREED).

206. "Confinement Properties of a GaInAs/InP Quantum Point Contact"
T.P. Martin, CA. Marlow, L. Samuelson, A.R. Hamilton, H. Linke and **R.P. Taylor,**
Physical Review **B 77** 155309 (2008) (REFEREED)

207. "Carrier Density in a GaInAs/InP heterostructure"
T.P. Martin, CA. Marlow, L. Samuelson, H. Linke and **R.P. Taylor,**
Proceedings of The 17th International Conference on Electronic Properties of
Two Dimensional Systems (EP2DS17), Italy, July, 2007.
Physica E (Electronic properties of low dimensional semiconductors and nanostructures)
40 (5) 1754-1756 (2008) (REFEREED)

208. "Enhanced Zeeman Splitting in GaInAs Quantum Point Contacts"
T.P. Martin, A. Szorkovszky, A.P. Micolich, A.R. Hamilton, C.A. Marlow, H. Linke
and **R.P. Taylor**

Applied Physics Letters **93** 012105 (2008) (REFEREED)

209. "Enhanced Zeeman Splitting in GaInAs Quantum Point Contacts"
T.P. Martin, A. Szorkovszky, A.P. Micolich, A.R. Hamilton, C.A. Marlow, H. Linke and **R.P. Taylor**
Virtual Journal of Nanoscale Science & Technology, July 21st 2008 (REFEREED)

210. "Biophilic Fractals and the Visual Journey of Organic Screen-savers"
R.P. Taylor, and J.C. Sprott,
The Journal of Nonlinear Dynamics, Psychology, and Life Sciences, **12** *117-129* (2008)
(INVITED)

211. "Buckley Trees and their Enhanced Fractal Complexity"
R.P. Taylor
Computer-generated Images published in the book *"The Complete Idiot's Guide to String Theory"* by Scientific American editor George Musser (July 2008) (INVITED)

212. "Investigation of EEG Response to Fractal Patterns"
C.M. Hagerhall, T. Laike, **R.P. Taylor,** M. Küller, R. Küller and T.P Martin
Perception **3**7 (10) 1488-1494 (2008) (REFEREED).

213. "Artistic, Scientific and Historical Investigations of the Poured Paintings called The Painting"
R.P. Taylor
Technical document
Fractals Research (2008), ISBN: 0-9791874-3-5

214. "Dimensional Interplay Analysis of 'Poured' Paintings: Background Information."
R.P. Taylor
Technical Document
Fractals Research (2008), ISBN: 0-9791874-4-3

215. "The Visual Complexity of Pollock's Dripped Fractals"
RP Taylor, B Spehar, CWG Clifford, BR Newell
Unifying Themes in Complex Systems IV, Springer Berlin Heidelberg, 175-182 (2008)

216. "Chaotic Scattering in Nano-electronic Systems – From Billiards to Clusters"
T.P. Martin, C.A. Marlow, B.C. Scannell, M.S. Fairbanks, H. Linke, S.A. Brown, **R.P. Taylor**
International Journal of Nanotechnology, 408 **6** (2009) (INVITED and REFEREED)

217. "Electronic Transport in Quasi-1D DNA-Templated Nanoparticle Arrays"
M.S. Fairbanks, G.J. Kearns, B.C. Scannell, A. Loftus, J.E. Hutchision, **R.P. Taylor**
Proceeding of the APS Meeting (2009)

218. "Comment on "Drip Paintings and Fractal Analysis"
A.P. Micolich,_ B.C. Scannell, M.S. Fairbanks, T.P. Martin, and **R.P. Taylor**
arXiv:0712.1652v1 [cond-mat.stat-mech] (2009)

219. "Chaotic Electronic Transport of Nanocluster Wires"
M.S. Fairbanks, T.P. Martin, C.A. Marlow, B.C. Scannell, H. Linke, SA. Brown, **R.P. Taylor**
Proceeding of the APS Meeting (2009)

220. "The Museum of Unnatural Form: The Visual and Tactile Experience of Fractals"
D. Della-Bosca and **R.P. Taylor**
The Journal of Nonlinear Dynamics, Psychology, and Life Sciences, **13** 145-154 (2009)
(INVITED)

221. "Emergence of Patterns from Nature's Chaos, Through Parallels Between Edward Lorenz and Yves Klein"
R.P. Taylor
Invited Chapter, book commemorating the life of Edward Lorenz, published

by *The Journal of Nonlinear Dynamics, Psychology, and Life Sciences,* **13** 341 (2009) (INVITED).

222. "Reflecting the Impossible"
R.P. Taylor
*Nature, **460,** 462* (2009) (INVITED).

223. "Fractals in Nano-devices"
R.P. Taylor,
The Nano-Experts Series, *The One-Line Journal of Nanotechnology*
(www.azonano.com), http://www.azonano.com/thought%20leaders.asp

224. "Investigation of Electron Wave Hybridization in GaInAs/InP Arrays"
M.S. Fairbanks, T.P. Martin, B.C. Scannell. C.A. Marlow, H. Linke and **R.P. Taylor**
Applied Physics Letters **95** 182105-1-3 (2009) (REFEREED)

225. "Fractal Electronic Circuits Assembled From Nanoclusters"
M.S. Fairbanks, D. McCarthy, S.A. Brown, **R.P. Taylor**
Proceedings of "4nd International Conference on Advanced Materials and Nanotechnology"
Dunedin, New Zealand, February, 2009.
AIP Conference Proceedings Series, **1151** 63-66 (2009) (REFEREED)

226. "Measuring Hybridization in GaInAs/InP Electron Billiard Arrays"
M.S. Fairbanks, T.P. M,artin, B.C. Scannell, C.A. Marlow, H. Linke and **R.P. Taylor**
Physica E **42** 1205-1207 (2010), conference proceedings of EP2DS (REFEREED)

227. "An Optical Demonstration of Fractal Geometry"
B.C. Scannell, B. Van Dusen and **R.P. Taylor**
The Bridges Proceedings, Tarquin books, 349-350 (2010) (REFEREED)

228. "Field Orientation Dependence of the Zeeman Spin Splitting in InGaAs Quantum Point Contacts"
T.P. Martin, A. Szorkovsky, C.A Marlow, **R.P. Taylor,** A.P. Micolich, A.R. Hamilton
Physical Review B, Rapid Communication, **81** 041303 (R) (2010) (REFEREED)

229. "Across The Cultural Divide"
R.P. Taylor
Review of the book "The Neural Imagination" by Irving Massey,
Nature, **463** 431 (2010) (INVITED)

230. "Chaos, Fractals, Nature"
R.P. Taylor, book (electronic edition)
Fractals Research (2010) ISBN: 0-9791874-1-9

231. "Multifractal and Statistical Comparison of Painting Techniques of Adults and Children"
M. Fairbanks, J. Mureika and **R.P. Taylor**
SPIE Proceedings of Electronic Imaging, special edition on
"Computer Vision and Image Analysis of Art" Ed. D.G. Stork, J. Coddington
and A. Bentkowska-Kafel**, 7531** 7531001-6 *(*DOI: 10.1117/12.840411) (2010) (REFEREED)

232. "Simulations of fractal electronic circuits"
R. Montgomery, M.S. Fairbanks, SA. Brown, **R.P. Taylor**
Proceeding of the APS Meeting (2010)

233. "The Crop Circle Evolves"
R.P. Taylor
Nature **465** 693 (2010). *(*COMMISSIONED INVITATION)

234. "The Curse of Jackson Pollock"
R.P Taylor
Finalist of the Northwest Perspectives essay contest
Oregon Quarterly Magazine, Winter Edition (2011) (INVITED)

235. "Artistic Forms and Complexity"
J.P. Boon, J. Casti and **R.P. Taylor**
The Journal of Nonlinear Dynamics, Psychology, and Life Sciences
15, 265-283 (2011) (REFEREED)

236. "Physics – Principles and Applications"
D.C. Giancoli, Edited by **R.P. Taylor** and S. Macklavzina
Book published by Pearson/Prentice Hall (2010). ISBN 0558554555 (INVITED)

237. "Mood Swings"
R.P. Taylor
Science **329** 1149 (2010) (INVITED AND COMMISSIONED)

238. "The Art and Science of Foam Bubbles"
R.P. Taylor
The Journal of Nonlinear Dynamics, Psychology, and Life Sciences **15** 129-135 (2011)
(INVITED)

239. "Scaling Analysis of Spatial and Temporal Patterns: From the Human Eye to the Foraging Albatross"
M.S. Fairbanks and **R.P. Taylor**
Chapter to the book "Non-linear Dynamical Analysis for the Behavioral Sciences
Using Real Data", published by CRC Press, Taylor and Francis Group (Boca Raton)
ISBN 978-1-4398-1997-5 (2011) (INVITED)

240. "Artificial Vision: Vision of Beauty"
R.P. Taylor, review article
Physics World 22-27 May 2011 (INVITED AND COMMISSIONED)

241. "Fractal Architecture Across Cultures and Continents"
R.P. Taylor
Engawa Architecture Magazine **5** 1-4 (2011) (INVITED).

242. "Benoit Mandelbrot's Fractal World"
R.P. Taylor
Physics Today, 63-64, May 2011 (INVITED AND COMMISSIONED)

243. "Light, Color and Vision (edition 2011)"
R.P. Taylor,
Textbook, Pearson/Prentice Hall (ISBN 0558998755) (2011)

244. "NSF Program Benefits Schools in Need"
R. Parthasarathy, **R.P. Taylor** et al
Science, commentary, **322** 173-174 (2011).

245. "Look What Cropped Up"
R.P. Taylor
Tilth, **22** 16 (2011) (COMMISSIONED)

246. "Perceptual and Physiological Responses to Jackson Pollock's Fractals"
R.P. Taylor, B. Spehar, P. van Donkelaar, C. Hagerhall,
Chapter in the book "Art and the Brain" published in the series Frontiers
in Human Neuroscience, **5** 1-13 (2011) (INVITED, REFEREED).

247. "Physics, Perception and Physiology of Jackson Pollock's Fractals"
R.P. Taylor
i-Perception, **2** (4) 284 ISSN: 20141-6695 (2011) (REFEREED).

248. "Beauty and the Beholder: The Role of Structure in Visual Preference"
B. Spehar and **R.P. Taylor**

Perception, **40** 122-123 (2011) (REFEREED).

249. "Social Mood, Deep History and the Elliot Waves Principle"
J. Casti, J. Meyer and **R.P. Taylor**
Fractals Research, 1-16, ISBN 978-0-9791874-5-2 (2011)

250. "The Unreasonable Beauty of Mathematics"
George Musser
I contributed photographic images for this on-line article for *Scientific American* July 2011
(http://www.scientificamerican.com/article.cfm?id=livio-the-unreasonable-beauty-of-mathematics)

251. "Coming Soon to a Field Near You: The Physics of Crop Circle Formation"
R.P. Taylor
Physics World **24** 26-31 August 2011 (INVITED AND COMMISSIONED)

252. "Fractal Electronic Devices: Simulation and Implementation"
M.S. Fairbanks, D. McCarthy, S. Scott, S.A. Brown, **R.P. Taylor**
*Nanotechnology **22*** 365304 (2011) *(*REFEREED)

253. "The Transience of Virtual Fractals"
R.P. Taylor
The Journal of Nonlinear Dynamics, Psychology, and Life Sciences
16, *91-96* (2012) (INVITED*)*

254. "Light, Color and Vision (edition 2012)"
R.P. Taylor,
Textbook, Pearson/Prentice Hall (ISBN 1256090492) (2012)

255. "The Abstract Expressionists and Les Automatistes: A Shared Multi-fractal Depth?"
J. Mureika and **R.P. Taylor**
Special Issue on "Image Processing for Art Investigation",
Signal Processing **93** 573-578 (2013) (REFEREED)

256. "Fractal Expressionism: the Art and Science Behind Jackson Pollock's Paintings"
R.P. Taylor, book
World Scientific (INVITED AND COMMISSIONED)

257. "Probing the Sensitivity of Electron Wave Interference to Scattering-Induced Disorder in Solid-state Devices"
B.C. Scannell, I. Pilgrim, A.M. See, R.D. Montgomery, P.K. Morse, M.S. Fairbanks, C.A. Marlow, H. Linke, I. Farrer, D.A. Ritchie, A.R. Hamilton, A.P. Micoloch, L. Eaves and **R.P. Taylor**
Physical Review B **85** 195319 (2012) (REFEREED)

258. "Impact of Small-angle Scattering on Ballistic Transport in Quantum Dots"
Andrew M. See, Ian Pilgrim, Billy C. Scannell, Rick Montgomery, Oleh Klochan Martin Aagesen, Poul-Erik Lindelof, Ian Farrer, David A. Ritchie, **R. P. Taylor,** Alex R. Hamilton and Adam P. Micolich
Physical Review Letters **108** 196807 (2012) (REFEREED)

259. "Is it the Boundaries or Disorder that Dominates Electron Dynamics in Semiconductor billiards?"
A.P. Micolich, A.M. See, B.C. Scannell, C.A. Marlow, T.P. Martin, I. Pilgrim, A.R. Hamiltion, H. Linke, and **R.P. Taylor**
Invited review article, *Fortshr. Phys.* **61**, 332, (2013) (REFEREED).

260. "The Influence of Small Angle Scattering on Ballistic Transport in Quantum dots"
A.M. See, I. Pilgrim, B.C. Scannell, R. Montgomery, O. Klochan
M. Aagesen, P.-E. Lindelof, I. Farrer, D.A. Ritchie, **R. P. Taylor,** A.R. Hamilton and A.P. Micolich
The Proceedings of the International Conference on Semiconductor Physics (2013) (REFEREED).

261. "A Fractal Comparison of Escher and Koch Tesselations"
B. van Dusen, B.C. Scannell and **R.P. Taylor**
Fractals Research, 1-16, ISBN 978-0-9791874-6-9 (2012)

262. "Human EEG Responses to Exact and Statistical Fractal Patterns"
C. Hagerhall, T. Laike, **R.P. Taylor,** M. Kuller, E. Marcheschi, C. Bodyton
IAPS (2012) (REFEREED).

263. "The Art and Science of Hyperbolic Tesselations"
B. van Dusen and **R.P. Taylor**
The Journal of Nonlinear Dynamics, Psychology, and Life Sciences, **17** 317-323
INVITED (2013).

264. "Making Quantum Devices with Electrical Properties that are Robust to Thermal Cycling
Using AlGaGaAs HIGFET Structures"
A.M. See, I. Pilgrim, B.C. Scannell, R. Montgomery, O. Klochan
M. Aagesen, P-E. Lindelof, I. Farrer, D.A. Ritchie, **R. P. Taylor,** A.R. Hamilton and A.P. Micolich
Proceeding of the APS Meeting **1** 20012 (2013)

265. "Stimulating Creativity by Integrating Research and Teaching Across the Academic Disciplines"
R.P. Taylor
Proceeding of the APS Meeting (2013)

266. "Neural Stimulation via Fractal Electrodes"
R.D. Montgomery, W. Watterson, I. Pilgrim, K. Fairley, D.W. Johnson, H. Linke, **R.P. Taylor**
Proceeding of the APS Meeting, **1** 31012 (2013)

267. "Investigating the Thermal Stability of Electron Transport Properties in Modulation-doped
Semiconductor Heterostructure Systems"
I. Pilgrim, B.C. Scannell, A.M. See, R.D. Montgomery, P.K. Morse, M.S. Fairbanks, C.A. Marlow
H. Linke, I. Farrer, D.A. Ritchie, A.R. Hamilton, A.P. Micoloch, L. Eaves and **R.P. Taylor**
Proceeding of the APS Meeting, **1** 23008 (2013)

268. "Fractals in Art and Nature: Why Do We Like Them?"
B. Spehar and **R.P. Taylor**
SPIE, special edition on Human Vision and Electronic Imaging, **8651** 865118 (2013)
doi:10.1117/12.2012076. (REFEREED).

269. "A Fascination with Fractals"
R.P. Taylor
Invited feature article, *Physics World,* 37-41, September 2013. (INVITED)

270. "The Fractalist"
R.P. Taylor
Invited Review, *Physics Today,* 2013. (INVITED)

271. "General Physics Study Guide"
R.P. Taylor
Prentice Hall, 2013.

272. "Fractal Electrode Enhanced Organic Photovoltaic Cells"
R.L. Chamousis, L. Chang, W. J. Watterson, R. Montgomery, **R.P. Taylor**, A.J. Moule,
S.E. Shaheen, B. Ilan, J. van de Lagemaat and F.E. Osterloh
Papers of the American Chemical Society, **245** (2013). (REFEREED).

273. "The Fractal Clock"
R. Downing and **R.P. Taylor**
The Journal of Nonlinear Dynamics, Psychology, and Life Sciences, **18** 109 (2014)
(INVITED)

274. "Creative Confluence"
M.M.M. Lowcre et al, "Organic Creativity and the Physics Within"
John Benjamins Publishing, Amsterdam and Philadelphia, Ed. J.F. Hoorn (2014).
(http://benjamins.com/#catalog/books/z.179/main). (REFEREED).

275. "Fractal Images Induce Fractal Pupil Dilations"
P. Moon, J. Murday, S. Raynor, J. Schirillo, M.S. Fairbanks and **R.P. Taylor**
The International Journal of Psychophysiology, **93**, 316 (2014) (REFEREED).

277. "Effect of Fractal Silver Electrodes on Charge Collection and Light Distribution in Semiconducting Organic Polymer Films"
R.L. Chamousis, L. Chang, W. J. Watterson, R. Montgomery, **R.P. Taylor**, A.J. Moule, S.E. Shaheen, B. Ilan, J. van de Lagemaat and F.E. Osterloh
The Journal of Materials Chemistry A, **2** 16608 (2014) (REFEREED).

278. "The effects of visual scene complexity on human visual cortex"
A.J. Bies, J. Wekselblatt, C. Boydston, **R.P. Taylor** and M.E. Sereno
Society for Neuroscience, 2015 [Abstract]

279. "An Edgy Image Statistic: Semi-Automated Edge Extraction and Fractal Box-Counting Algorithm Allows for Quantification of Edge Dimension In the Natural Scenes"
A.J. Bies, R.P. Taylor, and M.E. Sereno
Journal of Vision, **15** (12), 769-769 (2015) [Abstract]

280. "Human Physiological Benefits of Viewing Nature: EEG Response to Exact and Statistical Fractal Patterns"
C.M. Hagerhall, T. Laike, M. Küller, E. Marcheschi, C. Boydston and **R.P. Taylor**
The Journal of Nonlinear Dynamics, Psychology, and Life Sciences, **19** 1-12 (2015) (REFEREED).

281. "Fractal Interconnects for Neuroelectronic Interfaces and Implants using the Same"
R.P. Taylor and S.A. Brown,
U.S. Patent no. 12/931978, issued July 2015

282. "Temporal Structure of Human Gaze Dynamics is Invariant During Free Viewing"
C.A. Marlow, I.V. Viskontas, A. Matlin, C. Boydston, A. Boxer and **R.P. Taylor**
PLoS ONE **10 (9),** e0139379 (2015). doi:10.1371/journal.pone.0139379
(REFEREED).

283. "Beauty and the Beholder: The Role of Visual Sensitivity in Visual Preference"
B. Spehar, S. Wong, S. van de Klundert, J. Lui, C.W.G. Clifford and **R.P. Taylor**
Frontiers in Human Neuroscience, **9 (514)** (2015) doi:10.3389/fnhum.2015.00514
(REFEREED).

284. "General Physics Study Guide (Edition 2)"
R.P. Taylor
Prentice Hall, 2015.

285. "A Complex Story: Universal Preference vs. Individual Differences Shaping Aesthetic Response to Fractals Patterns?"
N. Street, A. Forsythe, R.G. Reilly, **R.P. Taylor,** C. Boydston and M.S. Helmy,
Frontiers in Human Neuroscience, **10 (213)** (2016). doi:10.3389/fnhum.2016.00213
(REFEREED).

286. "The Aesthetic Response to Exact Fractals Driven by Physical Complexity"
A. Bies, D.R. Blanc-Golhammer, C.R. Boydston, **R.P. Taylor** and M.E. Sereno
Frontiers in Human Neuroscience, **10 (201)** (2016) doi:10.3389/fnhum.2016.00210
(REFEREED).

287. "Taxonomy of Variations in Aesthetic Response to Fractal Patterns"

B Spehar, N. Walker and **R.P. Taylor**
Frontiers in Human Neuroscience, **10 (350)** (2016) doi:10.3389/fnhum.2016.00350
(REFEREED).

288. "General Physics Study Guide (Edition 3)"
R.P. Taylor
Prentice Hall, 2016.

289. "Spatial Localization Accuracy Varies with the Fractal Dimension of the Environment",
A. W. Juliani, A.J. Bies, C. Boydston, **R.P. Taylor**, M.E. Sereno
Vision Sciences Society Annual Meeting, 2016 [Abstract]

290. "Percepts from Noise Patterns: The Role of Fractal Dimension in Object Pareidolia"
A.J. Bies, A. Kikumoto, C. Boydston, A. Greenfield, K.A. Chauvin, **R.P. Taylor** and M.E. Sereno
Vision Sciences Society Annual Meeting, 2016 [Abstract] (2016)

291. "Navigation Performance in Virtual Environments Varies with Fractal Dimension of Landscape"
A. W. Juliani, A.J. Bies, C.R. Boydston, **R.P. Taylor**, and M.E. Sereno
Journal of Environmental Psychology, **47,** 155-165 (2016) (doi: 10.1016/j.jenvp.2016.05.011)
(REFEREED).

292. "Relationship Between Fractal Dimension and Scaling Decay Rate in Computer-generated Fractals"
A.J. Bies, C.R. Boydston, **R.P. Taylor**, and M.E. Sereno
Symmetry **8,** (7) 66 (2016). doi:10.3390/sym8070066
(REFEREED).

293. "Fractal Fluency: An Intimate Relationship Between the Brain and Processing of Fractal Stimuli"
R.P. Taylor and B. Spehar
Chapter in the book *The Fractal Geometry of the Brain,* Springer (2016)
ISBN: 978-1-4939-3995-4 (INVITED)

294. "Fractal Interconnects as a Generic Interface to Neurons"
W.J. Watterson, S. Moslehi, J.H. Smith, R.D. Montgomery and **R.P. Taylor**,
Chapter in the book *The Fractal Geometry of the Brain,* Springer (2016)
ISBN: 978-1-4939-3995-4 (INVITED)

295. "Seeing Shapes in Seemingly Random Patterns: Fractal Analysis of Rorschach Ink Blots"
R.P. Taylor, T.P. Martin, R.D. Montgomery, J.H. Smith, A.P. Micolich, C. Boydston, B.C. Scannell, M.S. Fairbanks and B. Spehar
PlosOne 12(2): e0171289 (Feb 14th 2017) doi:10.1371/journal.pone.0171289
(REFEREED).

296. "Fractal Patterns in Nature and Art are Aesthetically Pleasing and Stress-Reducing"
R.P. Taylor
Smithsonian, March 31st 2017 (INVITED).

297. "Fractal Electrodes as a Generic Interface for Stimulating Neurons"
W.J. Watterson, R.D. Montgomery and **R.P. Taylor**
Nature: Scientific Reports 7, 6717 (2017) doi: 10.1038/s41598-017-06762-3
(REFEREED).

298. "Biological Mechanisms and Neurophysiological Responses to Sensory Impact from Nature"
C. Hagerhall, **R.P. Taylor**, G. Cerwen, G. Watts, M. van den Bosch, D. Press and S. Minta
Chapter to the book *Oxford Textbook of Nature and Public Health,* Oxford University Press
ISBN: 9780198725916, (2018) (REFEREED).

299. "General Physics Study Guide (Edition 4)"
R.P. Taylor
Prentice Hall, 2017.

300. "The Implications of Fractal Fluency for Bioinspired Architecture"
R.P. Taylor, A.W. Juliani, A.J. Bies, B. Spehar, and M.E. Sereno,
Journal of Biourbanism, **6** 23-40 (2018) (INVITED).

301. "Modelling the Improved Visual Acuity Using Photodiode Based Retinal Implants Featuring Fractal Electrodes"
W.J. Watterson, R.D. Montgomery and **R.P. Taylor**
Frontiers in Neuroscience, **12** (277), 1-14, doi: 10.3389/fnins.2018.00277 (2018)
(REFEREED).

302. "An Eye for Nature"
R.P. Taylor
The Journal of Nonlinear Dynamics, Psychology, and Life Sciences, **22**, 283-287 (2018)
(INVITED).

303. "The Artist Who Walked on the Moon"
R.P. Taylor
Nature, **558,** 518 (2018) (INVITED).
https://www.nature.com/articles/d41586-018-05401-9

304. "Fractal Analysis of Time Series Data Sets: Methods and Challenges"
I. Pilgrim and **R.P. Taylor**
Chapter to the book *Fractal Analysis* (IntechOpen) 2018. ISBN 978-953-51-6762-4.
(INVITED).

305. "A Factor Analytic Approach reveals variability and Consistency in Perceived Complexity Ratings of Landscape Photographs"
A. Bies, W. Tate, **R.P. Taylor** and M Sereno
Journal of Vision **18** 386-385 (2018).

306. "Perceived Complexity and Aesthetic Responses to Landscape Photographs"
W. Tate, **R.P. Taylor,** M Sereno and A. Bies
Journal of Vision **18** 385 (2018).

307. "Fractals in Architecture: The Visual Interest and Mood Response to Projected Fractal Light Patterns in Interior Spaces"
B. Abboushi, I. Elzeyadi, **R.P. Taylor** and M. Sereno
The Journal of Environmental Psychology, **61** 57-70 (2018)

308. "Perceptual Responses to Fractal Light Patterns"
B. Abboushi, I. Elzeyadi, **R.P. Taylor** and M. Sereno
The Conference Proceedings of the Annual Conference of the Illuminating Engineering Society (2018)

309. "Nature's Fractal Similarities: Integrating Art and Science"
R.P. Taylor
The Journal of Nonlinear Dynamics, Psychology, and Life Sciences, **23**, 173 (2019)

310. "A Fractal Epistemology for Scientific Psychology"
R.P. Taylor
Foreword to the book A Fractal Epistemology for Scientific Psychology"
Cambridge Scholars ISBN: 1527540235 (2019)

311. "Using Science to Generate and Tune Fractal Aesthetics"
B. Van Dusen, B. Spehar, M. Sereno and **R.P. Taylor**
Chapter to the book *Armchair and Paintbrush: An Eternal Philosophico-Artistic Tango* (Springer) 2019 (INVITED)

312. "Francis O'Connor and Jackson Pollock's Fractals"
R.P. Taylor

Fractals Research, ISBN: 0-9791874-7-8 (2019) (INVITED)

313. "Investigating Visual Interest and Mood Response to Light Patterns in Architectural Renderings"
B. Abboushi, I. Elzeyadi, **R.P. Taylor** and M. Sereno
Sustainable Urban Environments: Research, Design and Planning for the Next 50 Years (2019)

314. "Relaxing Floors: Fractal Fluency for the Built Environment"
J.H. Smith, C. Rowland, S. Moslehi, **R.P. Taylor,** A. Lesjak, M. Lesjak, S. Stadlober, L. Lee, J. Dettmar, M. Page and J. Himes
The Journal of Nonlinear Dynamics, Psychology, and Life Sciences, **24** 127-141 (2020) (INVITED)

315. "Fractal Solar Cells: A Marriage between Aesthetic and Electrical Performance"
E. Roe, A.J. Bies, W.J. Watterson, R.D. Montgomery, C.R. Boydston, M.E. Sereno, **R.P. Taylor**
PLOS ONE 1-13 (https://doi.org/10.1371/journal.pone.0229945) (2020) (REFEREED)

316. "The Role of an Aluminum Underlayer on the Biocompatibility and Mechanical Integrity of Vertically Aligned Carbon Nanotubes for Interfacing with Retinal Neurons"
W.J. Watterson, S. Moslehi, C. Rowland, K.M. Zappitelli, J.H. Smith, D. Miller, J.E. Chouinard, S.L. Golledge, **R.P. Taylor,** M. Perez, B.A. Aleman.
Micromachines, 11-27, **546** (2020). *Special edition of Micro/Nanofabrication for Retinal Implants in Micromachines* (Invited). doi:10.3390/mi11060546. (REFEREED)

317. "Machine Learning and Fractal Analysis Process for Classifying Motion"
S. Roach, C. Boydston and **R.P. Taylor**
US Patent filed: April 2020

318. "The Perception of Composite Fractal Environments"
Emily Owen, Kelly Robles, **Richard Taylor** and Margaret E. Sereno
Abstract, *Journal of Vision*, Vision Science Society (2020)

319. "Physical Guidance of *In Vitro* Retinal Neurons Using Zig-zag Surface Patterns"
S. Moslehi, W.J. Watterson, C. Rowland, J.H. Smith, M-T Perez, **R.P. Taylor**
American Journal of Biomedical Science and Research (AJBSR), **11**(4) (2020). (REFEREED)

320. "Investigating Visual Comfort, Visual Interest of Sunlight Patterns and View Quality Under Different Window Conditions in an Open Plan Office"
B. Abboushi, I. Elzeyadi, K. Van Den Wymelenberg, **R.P. Taylor**, M. Sereno, G. Jacobsen
Journal of the Illuminating Engineering Society (LEUKOS) **17** (4), 321-337 (2020)
DOI: 10.1080/15502724.2020.1785309 (REFEREED)

321. "A Shared Fractal Aesthetic Across Development"
K. Robles, N. Liaw, **R.P. Taylor,** D. Baldwin, M. Sereno
Nature: Humanities and Social Science Communications, (2020)
7:158 | https://doi.org/10.1057/s41599-020-00648-y (REFEREED)

322. "How Neurons Exploit Fractal Geometry to Maximize Physical Connectivity"
J.H. Smith, C. Rowland, B. Harland, S. Moslehi, K. Schobert, R.M. Montgomery, W.J. Watterson, J. Dalrymple-Alford, **R.P. Taylor**
Nature: Scientific Reports, **11**, 2332 (2021) https://doi.org/10.1038/s41598-021-81421-2.
Author Award for Top 20 Downloaded Articles (17th of 3500 articles), Scientific Reports (REFEREED)

323. "The Potential of Biophilic Fractal Designs to Promote Health and Performance: A Review of Experiments and Applications"
R.P. Taylor
Journal of Sustainability: Special edition "Architecture and Salutogenesis: Beyond Indoor Environmental Quality" **13**, 823 (2021) https://doi.org/10.3390/su13020823 (INVITED)

324. "Investigation of Fractal Carbon Nanotube Networks for Biophilic Neural Sensing Applications"

L.A. Browning, W. Watterson, E. Happe, S. Silva, R. Abril Valenzuela, J. Smith, M.P. Dierkes, **R.P. Taylor**, N.O.V. Plank and C. A. Marlow
Nanomaterials 11, **636** (2021) https://doi.org/10.3390/nano11030636 (REFEREED)

325. "Aesthetics and Psychological Effects of Fractal Based Design"
K.E. Robles, M. Roberts, C. Viengkham, J.H. Smith, C. Rowland, S. Moslehi, S. Stadlober, A. Lesjak, M. Lesjak, **R.P. Taylor,** B. Spehar and M.E. Sereno
Frontiers Environmental Psychology, special edition on Biophilic Design Rationale: Theory, Methods, and Applications, **12**, 699962 (2021) https://doi.org/10.3389/fpsyg.2021.699962 (REFEREED)

326. "Working with Fractals: A Resource for Practitioners of Biophilic Design"
R. Tromblin, B. Abboushi, L. Baraldo, B. Borel, B. Browning, J. Heerwagen, G. Nalin, K. Pei, N. Salingaros, C. Stolarski, **R.P.Taylor,** D. Walker and E. Winer
Published Report, *Terrapin Bright Green, New York* (2021) (INVITED)

327. "Fractal Fluency in the Built Environment"
S. Stadlober, A. Lesjak, **R.P. Taylor**, M. Lesjak
Fractals Research (2021), Book ISBN: 978-0-9791874-8-3 0-9791874-8-6 (INVITED)

328. "What Happens in Your Brain When You Walk Down the Street? Implications of Architectural Proportions, Biophilia, and Fractal Geometry for Urban Science"
A.A. Brielmann, N.H Buras, N.A. Salingaros, **R.P. Taylor**
Cover article, *Urban Science* **6** 10.3390/urbansci6010003 (2022). (REFEREED)

329. "Controlled Assembly of Retinal Cells on Fractal and Euclidean Electrodes"
S. Moslehi, C. Rowland, J.H. Smith, W.J. Watterson, D. Miller, C. Niell, B. Aleman, M. Perez, **R.P. Taylor**
PLOS ONE 17(4): e0265685 (2022) https://doi.org/10.1371/journal.pone.0265685 (REFEREED)

330. "Mystery Canvas Ties Famed Painter Motherwell to UO Days"
R.P. Taylor
Oregon Quarterly, Spring 2022 (INVITED)
https://around.uoregon.edu/content/mystery-canvas-ties-famed-painter-motherwell-uo-days

331. "Investigating Fractal Analysis as a Diagnostic Tool that Probes the Connectivity of Hippocampal Neurons"
C. Rowland, B. Harland, J.H. Smith, S. Moslehi, J. Dalrymple-Alford, **R.P. Taylor**
Frontiers in Physiology, https://doi.org/10.3389/fphys.2022.932598 (2022) (REFEREED)

332. "Fractal Shifts and Aesthetic Rifts: Climate Change and Emotional Well-being"
R. York and **R.P. Taylor**
Climatic Change **173**, 1-9 (2022) (REFEREED)

333. "Fractal Analysis of Orthodox Iconography using the Kolmogorov Complexity"
D. Peptenatu, I. Andronache, H. Ahammer, **R.P. Taylor**, B. Ciobanu, M. Burcea, C.I. Cirstea, A Lemeni, A. K. Gruia, A. Grecu, M. Marin, and H. F. Jelinek.
Scientific Reports **12,** 1-15 (2022) (REFEREED)

334. "Comparisons of retinal neuronal and glial cell interactions with fractal and grid-shaped electrodes"
S. Moslehi, C. Rowland, J.H. Smith, W. Griffiths, W. Watterson, D. Miller, C. Niell, B. Aleman, M. Perez, and **R.P. Taylor**.
Scientific Reports **12** 17513 (2022) (REFEREED)

335. "The Sensitivity of Neuron Arbor Geometry to the Fractal Properties of their Dendrites"
C. Rowland, J.H. Smith, B. Harland, J. Dalrymple-Alford, and **R.P. Taylor**
Frontiers in Network Physiology 3, 1072815 (2023) (REFEREED).
https://doi.org/10.3389/fnetp.2023.1072815

336. "Fractal Fluency: Processing of Fractal Stimuli Across Sight, Sound and Touch"
R.P. Taylor, C. Viengkham, J.H. Smith, C. Rowland, S. Moslehi, S. Stadlober, A. Lesjak, M. Lesjak,

B. Spehar
Invited book chapter for *The Fractal Geometry of the Brain, Edition II* Springer (2023)
To be published

337. "Fractal Electronics for Stimulating and Sensing Neural Networks: Enhanced Electrical, Optical and Cell Interaction Properties"
S. Moslehi, C. Rowland, J.H. Smith, W.J. Watterson, W. Griffiths, R.D. Montgomery, S. Philliber, C.A. Marlow, M-T Perez, and **R.P. Taylor**.
Invited book chapter for *The Fractal Geometry of the Brain, Edition II* Springer (2023).
To be published

338. "Fractal Resonance: Can Fractal Geometry to used to Optimize Connectivity of Neurons to Artificial Implants?"
C. Rowland, S. Moslehi, J.H. Smith, B. Harland, J. Dalrymple-Alford and **R.P. Taylor**,
Invited book chapter for *The Fractal Geometry of the Brain, Edition II* Springer (2023)
To be published

339. "The Art of Balance: Scaling Analysis of Poured Paintings Generated by Adults and Children"
M.S. Fairbanks, J. Mureika and **R.P. Taylor**,
Manuscript in preparation, to be submitted to *Leonardo*