Signatories & Ratifications as of 2013 for *International Covenant on Economic, Social, and Cultural Rights*

Diplometric Dashboard—Jonathan Moyer (JKSIS)
http://dataviz.du.edu/projects/pardee/diplodash/

UNIVERSITY of DENVER

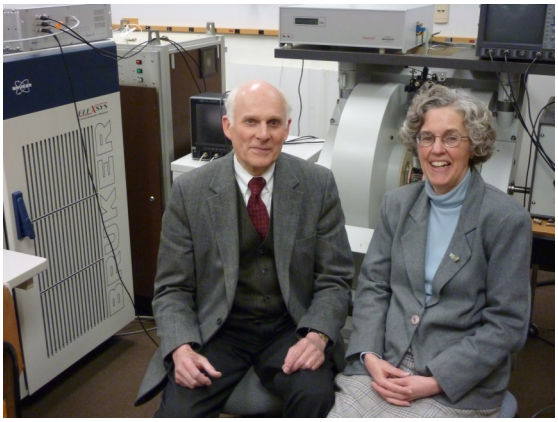
RESEARCH & SCHOLARSHIP MATTERS

Winter 2016

Publication of the Associate Provost for Research, Corinne Lengsfeld

The Spin on Electrons!

The University of Denver EPR Center is making major contributions to the practical applications of EPR. Electron paramagnetic resonance (EPR), also known as electron spin resonance (ESR), is used to study molecules that have unpaired electrons - primarily organic radicals and transition metal ions. With this information advancements are being made in myriad fields. Coordinated by two DU John Evans Professors, Gareth Eaton and Sandra Eaton from the Department of Chemistry and Biochemistry, the DU EPR Center has developed technology that enables faster scans, higher resolution, and smaller systems all with the aim of moving this technology from sample imaging to medical imaging. They have sought to understand electron spin relaxation at the most fundamental level, and to apply this understanding to problems ranging from quantum computing to biochemistry of Alzheimer's (with Associate Professor, Martin Margittai) and medical imaging. This technology is currently being used by Professor Howard Helpern, oncologist at the University of Chicago through a grant from the National Institutes of Health, to image tumors in a way that has never been done before. Other grants are also supporting the design and construction of an innovative digital EPR spectrometer and development of preclinical imaging spectrometers collaboratively with Bruker BioSpin. The innovative instrumentation used at the EPR Center is designed and built with the help of DU Senior Research Engineers, George Rinard and Richard Quine (RSECS). Research involves both undergraduate and graduate students supported and mentored by professional research staff in collaboration with multidisciplinary teams from numerous other institutions.



IN THE NEWS

***Time*— "The Long History of Conflict Between Russia and Turkey" —op-ed by Jonathan Adelman, Professor, JKSIS**

CBS News— "How the Pros Manage Super Bowl Jitters" —quotes from Mark Aoyagi, Director of Sport and Performance Psychology and Associate Professor, GSPP

***Denver Post*— "Night Light Woes Spur Colorado Push to Restore Starry Skies" —quotes from Robert Stencel, Professor and Womble Chair, Astrophysics, NSM**

9 News— "Donald Trump's 'Muslim Ban' has No Legal Standing, White House Says" —on-camera interview with Seth Masket, Chair of Political Science, AHSS

***Denver Post*— "DU Report Finds Colorado Cities Spend Millions Arresting the Homeless" —cites report from Sturm students, quotes from Nantiya Ruan, Professor, SCOL**

Fox 31—"DU Engineers, Computers Help Athletes Recover from Injuries"—video and quotes about Bradley Davidson's innovative human dynamics lab, RSECS

FOR MORE INFORMATION

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Team Science with the Department of Energy

With the rapid formation of renewable energy technologies and their unpredictable nature, the existing power grid is facing new challenges in grid security and sustainability. The US Department of Energy has funded a $4 million project aimed at solving these pressing challenges, specifically in regards to solar energy. The project, Microgrid-Integrated Solar Storage Technology (MISST), which is in year one of a three year grant, is developing a viable solution for achieving controllable and reliable photovoltaic solar generation (PV). Three core technologies that are being investigated during this project:

- Smart inverters to address the stability issue associated with solar energy while increasing its revenue source.
- Efficient battery storage to address the availability and variability issues associated with solar energy.
- Microgrid control to maximize the benefit of solar energy through coordinated operation with demand and energy storage.

Dr. Amin Khodaei, Assistant Professor with the Ritchie School of Engineering and Computer Science (RSECS), in collaboration with Commonwealth Edison, Illinois Institute of Technology, Veriown, Azimuth Energy, Schneider Electric, S&C Electric, OSIsoft, Argonne National Laboratory, National Renewable Energy Laboratory, and Quanta Technology, will lead the effort on the development of the microgrid master controller as well as data collection and solution analyses. Using state-of-the-art laboratory and computational facilities available in the new RSECS building, Dr. Khodaei will help ensure a successful completion for the project!

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Rental by Owner - a Taxable Industry?

The growth of the so-called “sharing economy” – a term to describe making assets owned by one person available for use by others – has exploded with the internet. This has caused a proliferation of properties available for short-term rental (STR) to visitors. These rentals are advertised on a variety of websites, among the most prominent of these sites are VRBO (vacation rental by owner) and Airbnb. The hotel industry STRs are advantaged by benefiting from the marketing efforts of the municipality without contributing to the lodging tax base that supports these marketing efforts. The City and County of Denver is currently considering such a lodger’s tax legislation. DU professors David Corsun, Karen Xie, and Cheri Young (DCB) conducted a first-of-its-kind research program to understand the impact on lodger’s tax and the differences between leisure and business STR travelers by looking at STR guest spending patterns. If a lodger’s tax was applied to only the 411 VRBO STR units in the City and County of Denver, it would in all likelihood generate $2 million in additional tax revenue. Moreover 55% of STR renters who responded in the study noted that paying a lodging tax would have no impact on their decisions to travel to Denver and another 25% indicated they were uncertain it would have an impact.

Children Benefiting from Child-Centered Curriculum

"So we know that when children are playing there is the *potential* for them to simultaneously develop socially and emotionally and develop the foundations of mathematics, science, and literacy. However, to do this, teachers need an effective curriculum," DU Professor Doug Clements (MCE) recently remarked. He and fellow professor Julie Sarama (MCE) contributed to the development of a new curriculum designed to address the growing concerns around Pre-K instructional time. Many professionals feel that Pre-K does not adequately balance the child's needs among literacy, science, math, and social-emotional domains. Connect4Learning (C4L) is a research-based, interdisciplinary approach to prekindergarten learning developed by Julie Sarama and Doug Clements along with other nationally recognized experts in early childhood education and seamlessly integrates child-centered activities with teacher-led instruction. Funded from the National Science Foundation, C4L curriculum is exclusively sold through Kaplan Early Learning Company and includes six units that address 140 measurable learning objectives while also supporting children's development of ten fundamental cognitive processes. The curriculum's learning objectives as designed fully align with the new Head Start Outcomes Framework as well as state early learning standards. Pilot programs using C4L have seen children achieving their learning goals beyond expectations! Teachers and parents have been surprised at how effectively the curriculum improves the children's performances across all domains.

FOR MORE INFORMATION

Doug Clements, Professor and Executive Director
Marsico Institute and Julie Sarama, Professor and Co-Executive Director of Marisco Institute

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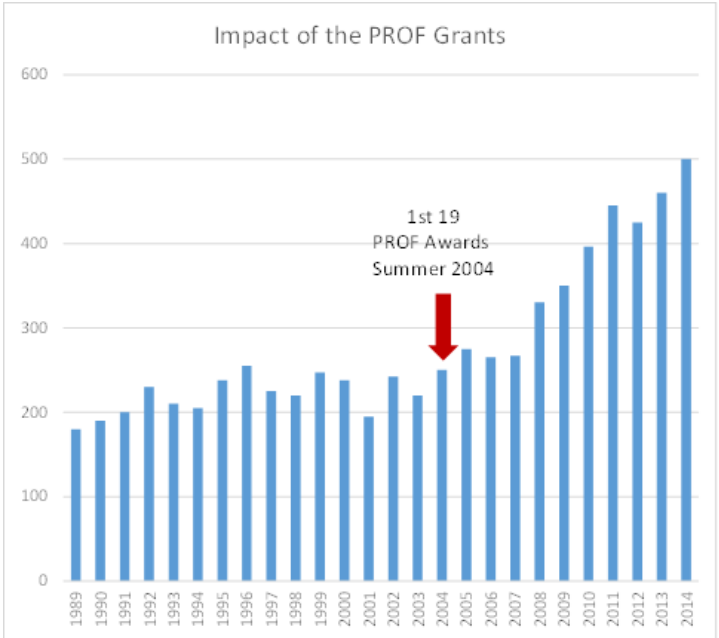
Email: Douglas.Clements@du.edu
Marisco Institute: 303-871-2217
National Science Foundation video— https://www.nsf.gov/news/mmg/mmg_disp.jsp?med_id=79968&from=

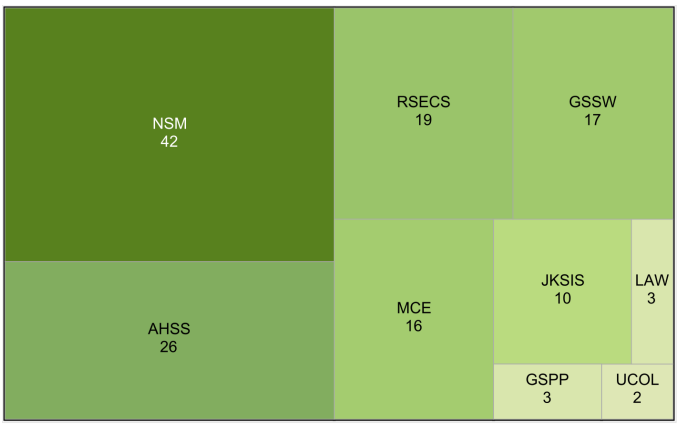
DID YOU KNOW?

Prior to the establishment of the PROF internal seed funding program in 2004, DU had a fairly static annual publication rate. Since the inception of this program our annual publication rate has risen by nearly 250%.



FAST FACTS

- The paper "Romantic Love Conceptualized as an Attachment Process" is the highest cited paper in DU history, authored by Cindy Hazan and Philip Shaver.
- Psychology Professor Bruce Pennington's article "Executive Function and Developmental Psychopathology" has the largest number of citations of any current DU faculty members.



- Visualization of data representing faculty in each division with external research expenditures in FY2015

FOR MORE INFORMATION

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Spotlight on Success: A Denver Public School Story

DU is engaged in many university-community research partnerships to leverage knowledge development in support of the public good. One example is Assistant Professor Yolanda Anyon's (GSSW) collaboration with Denver Public Schools (DPS) to identify best practices in prevention and intervention that can be used by educators to reduce racial disparities in exclusionary discipline and end the school-to-prison pipeline. In recent years, scholars, practitioners, community members, and media outlets have become increasingly interested in alternatives to practices of suspension and expulsion, which disproportionately impact students of color and increase their risk for contact with the criminal justice system. Dr. Anyon's "Spotlight on Success" project is a mixed methods study to identify innovative strategies that have been used by 36 Denver schools who have low suspension rates. Five graduate students (two PhD and three MSW) have been involved in the project, which began in August 2015 and will continue through the summer of 2016. The project is supported by a small grant from Denver Public Schools, but has depended heavily on in-kind contributions of time by GSSW students and faculty. The "Spotlight on Success" study builds on a researcher-practitioner partnership that GSSW faculty began developing in 2013 with the school district, a community-based organization, and the local teachers' union, recently highlighted in an NBC news story: http://www.nbcnews.com/news/latino/denver-schools-urge-alternatives-expulsion-suspension-n516146

Competent to Stand Trial

Colorado has experienced a 206% increase in mental health competency to stand trial referrals since 2006. Legislators and systems are trying to find solutions to the evaluation crush. States like Washington and Maryland imposed a 7-day maximum timeframe for the evaluations, while national averages hold near a 31-day turnaround time. Dr. Neil Gowensmith's (GSPP) research team reviewed more than 500 competency evaluations submitted to the judiciary and compared evaluators' opinions to the timeframe under which the evaluation was conducted. Incompetency opinions occurred 28.9% of the time, which approximates national norms. Evaluations completed within the first 15 days, however, showed a rate of 41.7%. The team's research efforts are showing that competency evaluations done too quickly run the risk of inaccurately finding defendants incompetent, when more likely the defendant is under the influence of drugs or experiencing an un-medicated psychotic episode. Waiting 2-4 weeks to do the evaluation ensures a more accurate picture of the defendant's true capacities. These findings have clear and convincing implications for policies and practice around the country, and are impacting legislation and policy-making. The data has been shared in federal and state court hearings, legislative hearings, international conferences, and is being prepared for publication.

FOR MORE INFORMATION

Denver FIRST (University of Denver's Forensic Institute for Research, Service, and Training)

Neil Gowensmith, Assistant Clinical Professor

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NOTABLE ACCOMPLISHMENTS

Professor Laird Hunt's (AHSS) book, "Neverhome," is a New York Times Book Review Editor's Choice and an Inaugural winner of the Grand Prix de al Litterature Americaine.

Whitley Lehto advised by Assistant Professor Robin Tinghitella (NSM) was awarded the NSF Doctoral Dissertation Improvement Grant.

Professor Catherine Smith (SCOL) received the AALS Minority Groups Section's highest honor for senior faculty: the Clyde Ferguson, Jr. Award.

Nathan Sturtevant (RSECS) received the Association for the Advancement of Artificial Intelligence (AAAI) 2016 outstanding paper award of nearly 600 accepted papers. His paper, "Bidirectional Search that is Guaranteed to Meet in the Middle," was co – authored by Robert C. Holte, University of Alberta; Ariel Felner, Ben-Guiron University; and Guni Sharon, Ben-Guiron University.

Jeff Jenson (GSSW) received two prestigious national appointments. He was elected to the board of directors of the American Academy of Social Work and Social Welfare, and has been appointed as editor-in-chief of the *Journal of the Society for Social Work and Research*.

ABOUT THE PUBLICATION

Research and Scholarship Matters is a quarterly newsletter produced on behalf of the faculty of the University by the Associate Provost for Research.

Faculty with notable accomplishments or images suitable to the front panel of the next issue are encouraged to send them to Corinne Lengsfeld, Associate Provost for Research. Not all submissions can be included, but every attempt will be made to be inclusive of all high quality research, scholarship and creative works.

For back issues see access:
www.du.edu/research-scholarship/

RECENT MAJOR GRANTS AWARDED

Dinah Loerke (NSM) - $350,678
The Biomechanics of Intercalation in Germ-Based Elongation, funded by the National Institutes of Health

Yan Qin (NSM) - $666,901
Generation of cell-based and animal-based imaging systems for monitoring synaptic vesicular Zn2+, funded by the National Institutes of Health

Jesse Owen (MCE) - $293,998
Relationship Education Across Louisville, funded by Administration for Children and Families

Robin Leake (GSSW) - $714,895
National Capacity Building Center for Child Welfare Agencies, funded by the Research Foundation of State University through Administration for Children and Families

Ben Hankin (AHSS) - $840,682
Prefrontal Mechanisms of Selection: Disrupted in Internalizing Psychopathology, funded by the National Institutes of Health

Anne Comstock (GSSW) - $3,750,000
National Child Welfare Capacity Building Center for Tribes, funded by Administration for Children and Families

Amin Khodaei (RSECS) - $450,000
Microgrid-Integrated Solar Storage Technology, funded by the Department of Energy, funding is $4M with DU's share at $450,000

WANT MORE INFORMATION

Want to receive emails regarding resources, celebrations, opportunities, and upcoming deadlines related to research and scholarship? Join the DU-Research list serve by clicking https://listserv.du.edu/mailman/listinfo/du-research and subscribing.