

# Rico A.R. Picone

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## Education

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### *Doctor of Philosophy in Mechanical Engineering*

University of Washington, Seattle, Washington, 2014

Advisor (engineering): Joseph L. Garbini, Department of Mechanical Engineering

Advisor (physics): John A. Sidles, Department of Orthopædics

Dissertation: *Separative magnetization transport: theory, model, and experiment*

### *Master of Science in Mechanical Engineering*

Robotics, Controls, and Mechatronics

University of Washington, Seattle, Washington, 2010

Thesis: *Investigating the Effects of Polarizing Diffusion in Magnetic Resonance Force Microscopy*

### *Bachelor of Science in Engineering, Mechanical Engineering*

University of Nevada, Las Vegas, Las Vegas, Nevada, May 2008

Honors: Mechanical Engineering's Outstanding Graduate, Magna Cum Laude

## Professional appointments

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### *Associate Professor*

August 2014 – present

Saint Martin's University, Department of Mechanical Engineering, Lacey, Washington.

Teach, research, and serve in support of the university's mission to develop the whole person of each student. Research topics include magnetic resonance imaging technologies and artificial intelligence. Promoted to tenured Associate Professor in 2020.

### *Affiliate Associate Professor*

November 2014 – present

University of Washington, Department of Mechanical Engineering, Seattle, Washington.

Research the enhancement of magnetic resonance technologies through separative magnetization transport.

### *Co-Founder & Chief Executive Officer*

February 2014 – present

Dialectica, LLC, Olympia, Washington.

Lead Dialectica, an artificial intelligence company focused on information architecture.

### *Co-Principle Investigator*

January 2012 – October 2017

Institute for Soldier Healing, Seattle, Washington.

Lead development, design, and validation of magnetic resonance technologies. Author patent applications. Research methods of enhancing magnetic resonance imaging (MRI), nuclear magnetic resonance (NMR) spectroscopy, and magnetic resonance force microscopy (MRFM).

### *Research Engineer/Research Assistant*

March 2009 – August 2014<sup>†</sup>

Quantum Systems Engineering group, University of Washington, Seattle, Washington.

Investigate methods of enhancing magnetic resonance technologies. Design experimental methods (theory, protocols) and apparatus (instrumentation, RF system, etc.) for measuring magnetic resonance phenomena. Develop theoretical framework of separative magnetization transport.

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<sup>†</sup> discontinuously

## Patents

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Rico A.R. Picone, Bryan Powell, Jotham Lentz. *A Dialectical Information Architecture*. United States Patent (pending) No. 15672259. Filed 8 August 2017.

John A. Sidles, Joseph L. Garbini, Rico A.R. Picone, Jonathan P. Jacky. *Separative Magnetic Transport in a Magnetic Field Gradient*. US Patent US9810758B2. Granted 11 November 2017.

## Publications (peer-reviewed)

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Rico A.R. Picone, Dane Webb, Bryan Powell. *Metastimuli: an introduction to PIMS filtering*. In: Schmorow D., Fidopiastis C. (eds) *Augmented Cognition. Human Cognition and Behavior. HCII 2020. Lecture Notes in Computer Science*, vol 12197. Springer, Cham. 10 July 2020. DOI 10.1007/978-3-030-50439-7\_8.

Cameron Devine, Joseph L. Garbini, Rico A.R. Picone. *StateMint: A Set of Tools for Determining Symbolic Dynamic System Models Using Linear Graph Methods*. *The Journal of Open Source Education*, 2(14), 44, April 2019. DOI 10.21105/jose.00044.

Rico A.R. Picone, Solomon Davis, Cameron Devine, Joseph L. Garbini, John A. Sidles. *Instrumentation and control of harmonic oscillators via a single-board microprocessor-FPGA device*. *Review of Scientific Instruments*, Volume 88, April 2017, Pages 045108. DOI 10.1063/1.4979971.

Rico A.R. Picone, Jotham Lentz, and Bryan Powell. *The fuzzification of an information architecture for information integration*. In: Yamamoto S. (eds) *Human Interface and the Management of Information: Information, Knowledge and Interaction Design. HIMI 2017. Lecture Notes in Computer Science*, vol 10273. Springer, Cham. DOI 10.1007/978-3-319-58521-5\_11.

Paul E. Slaboch, Floraliza B. Bornasal, Rico A.R. Picone. *A Pilot Study of a Novel Set of Three Courses for Teaching Electrical System Analysis to Mechanical Engineering Students*. *American Society for Engineering Education Conference Proceedings*, June 2016. DOI 10.18260/p.26394.

Rico A.R. Picone & Bryan Powell. *A New Information Architecture: A Synthesis of Structure, Flow, and Dialectic*. *Human Interface and the Management of Information: Information and Knowledge Design, Lecture Notes in Computer Science*, Springer, Volume 9172, 2015, Pages 320-331. DOI 10.1007/978-3-319-20612-7\_31.

Rico A.R. Picone & Paul E. Slaboch. *A Novel Set of Courses for Teaching Electrical System Analysis to Mechanical Engineering Students*. *American Society for Engineering Education Rocky Mountain Section 2015 Conference*, April 2015.

Rico A.R. Picone, Joseph L. Garbini, John A. Sidles. *Modeling spin magnetization transport in a spatially varying magnetic field*. *Journal of Magnetism and Magnetic Materials*, Volume 374, 15 January 2015, pp. 440–450. (Open-access preprint: [arXiv:1310.7540](https://arxiv.org/abs/1310.7540) [cond-mat.mes-hall].)

## Publications (other)

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Rico A.R. Picone. *Separative magnetization transport: theory, model, and experiment*. PhD thesis, University of Washington, 2014.

Rico A.R. Picone. *Investigating the effects of polarizing diffusion in magnetic resonance force microscopy*. Master's thesis, University of Washington, 2010.

John A. Sidles, Joseph L. Garbini, Jonathan P. Jacky, Rico A.R. Picone, and Scott A. Harsila. *Elements of naturalness in dynamical simulation frameworks for Hamiltonian, thermostatic, and*

*Lindbladian flows on classical and quantum state-spaces*. Preprint: arXiv:1007.1958v1 [quant-ph], 2010.

## Conferences & presentations

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Rico A.R. Picone. *Hyperpolarization via spin transport for nanoMRI*. North China Institute of Aerospace Engineering. 30 May 2018. Invited speaker.

Rico A.R. Picone, Jotham Lentz, Bryan Powell. *The fuzzification of an information architecture for information integration*. Human-Computer Interaction International 2017 Conference. Vancouver, Canada, July 2017. Invited speaker and session chair.

Rico A.R. Picone. *Introduction to Magnetic Resonance Force Microscopy*. Olympia Science Café. 13 June 2017. Invited speaker.

Paul E. Slaboch, Floraliza B. Bornasal, Rico A.R. Picone. *A Pilot Study of a Novel Set of Three Courses for Teaching Electrical System Analysis to Mechanical Engineering Students*. Conference: American Society for Engineering Education. Presentation June 2016 by Bornasal.

Rico A.R. Picone & Bryan Powell. *A New Information Architecture: A Synthesis of Structure, Flow, and Dialectic*. Human-Computer Interaction International 2015 Conference. Los Angeles, USA, 23 January 2015. Invited speaker.

Rico A.R. Picone, Joseph L. Garbini, Solomon L. Davis, J.A. Sidles, Jonathan P. Jacky. *Separatory magnetic transport (SMT) in magnetic resonance force microscopy: macroscopic theory & experiment*. NanoMRI Conference 2012, Ascona, Switzerland, 26 July 2012. Invited speaker.

Rico A.R. Picone. *Dynamic nuclear polarization, separative transport in magnetic resonance force microscopy: theory & experiment*. IBM Almaden Research, San Jose, CA, USA, September 2011. Invited speaker.

John A. Sidles, Joseph L. Garbini, Jonathan P. Jacky, Rico A.R. Picone, and Scott A. Harsila. *Transport mechanisms for inducing dynamic nuclear hyperpolarization in magnetic resonance microsystems: dynamical theory, design rules, and experimental protocols*. The Freiberg Institute for Advanced Studies (FRIAS), Conference: Magnetic Resonance at the Microscale, Freiberg, Germany, July 2011. Invited speaker and poster. Presented by Sidles.

Rico A.R. Picone. *Investigating the effects of polarizing diffusion in MRFM*. Kavli Institute at Cornell University for Nanoscale Science Conference, Ithaca, NY, USA, August 2009. Poster.

## Grants

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PI: Rico A.R. Picone 2017 – 2018  
*UAV harvesting of strobili from Coniferae*.  
Washington State Department of Natural Resources. \$24,133.89.

PI: John Marohn, Cornell University. co-PI: Rico A.R. Picone. 2017 – 2019  
*Nanoscale spin hyperpolarization and imaging*.  
U.S. Army Research Office. Total funded: \$485,000. SMU awarded: \$20,829.

PI: Rico A.R. Picone. 2015  
*Energy Efficiency and Conservation*  
Independent Colleges of Washington, \$10,000

## Chairships, boards, memberships, and honors

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<i>Director</i> Master of Mechanical Engineering program, Saint Martin's University	2016 – present
<i>Director</i> Techne Design Institute, Saint Martin's University	2018 – present
<i>Editorial Board Member</i> Journal of Engineering Design, Law, and Innovation Knowledge	2018 – present
<i>Committee Member</i> South Sound Robotics Advisory Committee	2017 – present
<i>Member and Faculty Advisor for student chapter</i> American Society of Mechanical Engineers (ASME)	2018 – present
<i>Chair of "Information Architectures and Infrastructures" Session</i> Human-Computer Interaction International 2017 conference, Vancouver, Canada	14 July 2017
<i>Teaching Assistant of the Year</i> University of Washington	2013 – 2014
<i>Steve and Lynn Pratt Mechanical Engineering Fellow</i> University of Washington	2013 – 2014
<i>Ford Motor Company Fellow</i> Ford Motor Company	2012 – 2013
<i>Gray Fellowship Endowment Fellow</i> University of Washington	2008 – 2009