

# ROBERT JOYNT

## CURRICULUM VITAE

### ADDRESS

Dept. of Physics  
University of Wisconsin-Madison  
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### EDUCATION

Ph. D. in Physics, Univ. of Maryland, College Park, Maryland, USA, 1982  
Dissertation: *The Quantum Hall Effect*, supervised by Prof. R.E. Prange  
B.Sc. in Physics, St. Michael's College, Univ. of Toronto, Ontario, Canada, 1976

### EXPERIENCE

Founding Director, MS Program in Quantum Computing, 2018-present  
Chair, Dept. of Physics, University of Wisconsin-Madison, 2011-2014  
Associate Chair, Dept. of Physics, UW-Madison, 1997-1999, and 2017-present  
Professor, Dept. of Physics, UW-Madison, 1992-present  
Associate Professor, Dept. of Physics, UW-Madison, 1989-1992  
Assistant Professor, Dept. of Physics, UW-Madison, 1986-1989  
Senior Fellow, Kavli Institute of Theoretical Sciences, Beijing, 2018-present  
Associate Director, University of Wisconsin Materials Research Science and Engineering Center, 1996-2002  
Postdoctoral Research Associate and Proseminar Assistant in Quantum Field Theory and Solid State Physics, Institut für Theoretische Physik, ETH-Zürich, Switzerland, 1984-86  
Postdoctoral Research Associate and Lecturer in Many-Body Theory, Cavendish Laboratory, Cambridge University, England 1982-1984  
Research and Teaching Assistant, Dept. of Physics, University of Maryland, College Park, Maryland, 1976-1982

### HONORS

Fellow of the American Physical Society  
Romnes Faculty Fellow, University of Wisconsin-Madison  
Japan Society for the Promotion of Science Fellow  
NORDITA Visiting Professor  
Scottish University Physics Alliance Distinguished Visitor  
Ralph Myers award for teaching excellence, University of Maryland  
St. Michael's College Mathematics Scholarship, University of Toronto  
St. Michael's College Physics Scholarship, University of Toronto  
44 invited papers at national and international meetings

## FUNDING

Qubits in Gate-Defined Silicon Quantum Dots (PI: M. Eriksson)

DOD ARO

Total Award: \$ 10,063,825

Period: 04/01/17-03/31/20

Hybrid epitaxial semiconductor-superconductor qubits (PI: M. Vavilov) Source:

DOD ARO

Total Award: \$476,000

Period: 09/01/17-08/31/20

I have been continuously funded since 1987 with average research expenditures in my group of about \$200,000/yr.

## CITATIONS

H-index of 47 and 10,047 total citations as of November 12, 2020

## PUBLICATIONS

175. Anisotropy with respect to the applied magnetic field in relaxation and dephasing times of spin qubits, Yunjun Choi and R. Joynt, submitted to npj Quant. Info., 2021

174. Magnetic Noise from Metal Objects near Qubit Arrays, Jonathan Kenny and R. Joynt, submitted to Phys. Rev. A, (2020)

173. Speedup of the Quantum Adiabatic Algorithm using Delocalization Catalysis, Chenfeng Cao, Jian Xue, Nic Shannon, Robert Joynt, arXiv:2007.11212, Phys. Rev. Research **3**, 013092 (2021)

172. Measurement-free error correction with coherent ancillas, Vickram N. Premakumar, M. Saffman, Robert Joynt, arXiv:2007.09804, submitted to Phys. Rev. A, 2020

171. Achieving a quantum smart workforce, Clarice D. Aiello *et al.*, arXiv:2010.13778, submitted to npj Quant. Info., 2020

170. Tunable discrete scale invariance in transition-metal pentatelluride flakes, Yanzhao Liu, Huichao Wang, Haipeng Zhu, Yanan Li, Jun Ge, Junfeng Wang,

Liang Li, Ji-Yan Dai, Jiaqiang Yan, David Mandrus, Robert Joynt, and Jian Wang, *npj Quantum Materials* **5**, 1–6 (2020)

169. Phase diagram of the interacting persistent spin-helix state, Hong Liu, Weizhe Edward Liu, Stefano Chesi, Robert Joynt, and Dimitrie Culcer, *Phys. Rev. B* **102**, 205410 (2020)

168. Evolution with Magnetic Field of Discrete Scale Invariant Supercritical States in Graphene, Hailong Li, Haiwen Liu, Robert Joynt, and X. C. Xie, submitted to *Phys. Rev. B*, 2020

167. 2-Designs and Redundant Syndrome Extraction for Quantum Error Correction, V. N. Premakumar, Hele Sha, D. Crow, Eric Bach, Robert Joynt, arXiv:1907.04497, *Quantum Information Processing* **20**, 84, (2020)

166. Spatial Noise Correlations in a Si/SiGe Two-Qubit Device from Bell State Coherences, J. Boter, X. Xue, T. S. Krähenmann, T. F. Watson, V. N. Premakumar, D. R. Ward, D. E. Savage, M. G. Lagally, Mark Friesen, Susan N. Coppersmith, M. A. Eriksson, Robert Joynt, Lieven M. K. Vandersypen, arXiv:1906.02731, *Phys. Rev. B* **101**, 235133 (2020)

165. Effect of Coulomb screening on the discrete scale invariance of quasibound states in three-dimensional topological semimetals, Hongchao Liu, Haiwen Liu, Robert Joynt, and X. C. Xie, *Phys. Rev. B* **100**, 195140 (2019)

164. Error Mitigation in Quantum Computers subject to Spatially Correlated Noise, V. N. Premakumar, R. Joynt, arXiv: 1812:07076, submitted to *Quant. Inf. Comp.*, 2019

163. Discrete Scale Invariance in Topological Semimetals, Haiwen Liu, Hua Jiang, Ziqiang Wang, Robert Joynt, and X. C. Xie, submitted to *Phys. Rev. Lett.* (2020)

162. Electron spin relaxation of single phosphorus donors in metal-oxide-semiconductor nanoscale devices, S. B. Tenberg, S. Asaad, M. T. Mądzik, M. A. I. Johnson, B. Joecker, A. Laucht, F. E. Hudson, K. M. Itoh, A. Jakob, B. C. Johnson, D. N. Jamieson, J. C. McCallum, A. S. Dzurak, R. Joynt, and A. Morello *Phys. Rev. B* **99**, 205306 (2019)

161. Discrete scale invariance and  $\ln(B)$  periodic quantum oscillations in topological semimetals, *Science China: Physics, Mechanics & Astronomy*, Volume **62**, 037431 (2019)

160. Steering random spin systems to speed up the quantum adiabatic algorithm

- A. Özgüler, R. Joynt, and M. G. Vavilov, Phys. Rev. A **98**, 062311 (2018)
159. A generalized Stoner criterion and versatile spin ordering in 2D spin-orbit coupled systems, W. Liu, S. Chesi, D. Webb, U. Zuelicke, R. Winkler, R. Joynt, and Dimitrie Culcer, arXiv: 1708:0197, Phys. Rev. B **96**, 235425 (2017)
158. Superconductivity in Empty Bands and Multiple Order Parameter Chirality R. Joynt and Wen-Chin Wu, arXiv: 1705.05051, Nature Scientific Reports **7**, 12968 (2017)
157. Measurement-free implementations of small-scale surface codes for quantum dot qubits, H. Ekmel Ercan, Joydip Ghosh, Daniel Crow, Vickram N. Premakumar, Robert Joynt, Mark Friesen, S. N. Coppersmith, arxiv: 1708.08683, Phys. Rev. A **97**, 012318 (2018)
156. Evanescent-wave Johnson noise in small devices, Vickram N. Premakumar, Maxim G. Vavilov, R. Joynt, arXiv:1705.01165, Quantum Science and Technology **3**, 105001 (2017)
155. Topology of quantum discord, Nga Nguyen and R. Joynt, arXiv:1310.5286, Phys. Rev. A **50**, 155301 (2017)
154. Numerical computations of separability probabilities, Jianjia Fei, R. Joynt, arXiv:1409.1993, Rep. Math. Phys. **78**, 177 (2016)
153. Improved error thresholds for measurement-free error correction Daniel Crow, R. Joynt, Mark Saffman, arXiv:1510.08359, Phys. Rev. Lett. **117**, 130503 (2016)
152. Quantum interference in topological insulator Josephson junctions, Juntao Song, Haiwen Liu, Jie Liu, Yuxian Li, R. Joynt, Qing-feng Sun, X. C. Xie, arXiv:1602.00813, Phys. Rev. B **93**, 195302 (2016)
151. Do micromagnets expose spin qubits to charge and Johnson noise? , Allen Kha, R. Joynt, Dimitrie Culcer, arXiv:1511.05247, Appl. Phys. Lett. **107**, 172101 (2015)
150. Compressed sensing for Hamiltonian reconstruction, Kenneth Rudinger, R. Joynt, arXiv:1410.3029, Phys. Rev. A **92**, 052322 (2015)
149. Signatures of the valley Kondo effect in Si/SiGe quantum dots, Mingyun Yuan, R. Joynt, Zhen Yang, Chunyang Tang, D. E. Savage, M. G. Lagally, M. A. Eriksson, and A. J. Rimberg, Phys. Rev. B **90**, 035302 (2014)

148. Electromagnetic fluctuations near thin metallic films, Luke S. Langsjoen, Amrit Poudel, Maxim G. Vavilov, R. Joynt, arXiv:1310.2224, Phys. Rev. B **89**, 115401 (2014)
147. Sudden Decoherence Transitions for Quantum Discord, arXiv:1309.6355, Hyungjun Lim and R. Joynt, J. Phys. A: Math. Theor. **47**, 135305 (2014)
146. Classical Simulation of Quantum Noise, Daniel Crow and R. Joynt, arXiv:1309.6383, Phys. Rev. A **89**, 042123 (2014)
145. Comparing Algorithms for Graph Isomorphism Using Discrete- and Continuous-Time Quantum Random Walks, K. Rudinger, J.K. Gamble, E. Bach, M. Friesen, R. Joynt, and S. N. Coppersmith, Journ. of Comp. and Theor. Nanoscience **10**, 1653 (2013)
144. Power law scaling for the adiabatic algorithm for search engine ranking A. Frees, J. K. Gamble, K. Rudinger, E. Bach, M. Friesen, R. Joynt, and S. N. Coppersmith, arXiv:1211.2248, Phys. Rev. A **88**, 032307 (2013)
143. Relaxation of excited spin, orbital, and valley qubit states in single electron silicon quantum dots, C. Tahan and R. Joynt, arXiv:1301.0260, Phys. Rev. B **89**, 075302 (2014)
142. Magnetization-noise-induced collapse and revival of Rabi oscillations in circuit QED, A. De, R. Joynt, Phys. Rev. A **87**, 042336 (2013)
141. Relaxation in quantum dots due to evanescent-wave Johnson noise, A. Poudel, L. Langsjoen, M. Vavilov, and R. Joynt, Phys. Rev. B **87**, 045301 (2013)
140. Noninteracting multiparticle quantum random walks applied to the graph isomorphism problem for strongly regular graphs, K. Rudinger, J. K. Gamble, M. Wellons, E. Bach. S.N. Coppersmith, and R. Joynt, Phys. Rev. A **86**, 022334 (2012)
139. Qubit relaxation from evanescent-wave Johnson noise, L. Langsjoen, A. Poudel, M. G. Vavilov, R. Joynt, arXiv:1203.5024, Phys. Rev. A **86**, 010301(R) (2012)
138. Phenomenological noise model for superconducting qubits: two-state fluctuators and  $1/f$  noise, D. Zhou, R. Joynt, Supercon. Sci. Tech. **25**, 045003 (2012)
137. Single-shot measurement of triplet-singlet relaxation in a Si/SiGe double quantum dot, J. R. Prance, Zhan Shi, C. B. Simmons, D. E. Savage, M. G.

- Lagally, L. R. Schreiber, L. M. K. Vandersypen, Mark Friesen, R. Joynt, S. N. Coppersmith, M. A. Eriksson, arXiv:1110.6431, Phys. Rev. Lett. **108**, 046808 (2012)
136. Topology of entanglement evolution of two qubits, D. Zhou, G.-W. Chern, J. Fei, R. Joynt, arXiv:1007.1749, Internat. Journ. of Mod. Phys. B **26** 1250054 (2012)
135. Disappearance of entanglement: a topological point of view, D. Zhou, R. Joynt, arXiv:1006.5474, Quantum Inf. Proc. **11**, 571 (2012)
134. Cooling of cryogenic electron bilayers via the Coulomb interaction, John King Gamble, Mark Friesen, R. Joynt, S. N. Coppersmith, arXiv:1104.2622, Phys. Rev. B **84**, 125321 (2011)
133. Quasi-Hamiltonian Method for Computation of Decoherence Rates, R. Joynt, Dong Zhou, and Qiang-Hua Wang, arXiv: 0906.2843, Internat. Journ. of Mod. Phys. B **25**, 2115 (2011)
132. Tunable spin-selective loading of a silicon spin qubit, C. B. Simmons, J. R. Prance, B. J. Van Bael, Teck Seng Koh, Zhan Shi, D. E. Savage, M. G. Lagally, R. Joynt, Mark Friesen, S. N. Coppersmith, M. A. Eriksson, arXiv:1010.5828, Phys. Rev. Lett. **106**, 156804 (2011)
131. Spin-orbit splittings in Si/SiGe quantum wells, M. Prada, G. Klimeck, and R. Joynt, arXiv: 0908.2417, New J. Physics **13**, 013009 (2011)
130. Suppression of decoherence and disentanglement by the exchange interaction, A. De, A. Lang, D. Zhou, and R. Joynt, arXiv 1006.5943, Phys. Rev. A **83**, 042331 (2011)
129. Pauli spin blockade and lifetime-enhanced transport in a Si/SiGe double quantum dot, C. B. Simmons, Teck Seng Koh, Nakul Shaji, Madhu Thalakulam, L. J. Klein, Hua Qin, H. Luo, D. E. Savage, M. G. Lagally, A. J. Rimberg, Robert Joynt, Robert Blick, Mark Friesen, S. N. Coppersmith, M.A. Eriksson, arXiv:1008.5398, Phys. Rev. B **82**, 245312 (2010)
128. Prediction of extremely long spin lifetimes in wurtzite semiconductors, N. Harmon, W.O. Putikka, and R. Joynt, Appl. Phys. Lett. **98**, 073108 (2011)
127. Theory of decoherence of N-state quantum systems in the Born-Markov approximation, R. Joynt, B. H. Nguyen, and V. H. Nguyen, Adv. Nat. Sci.: Nanosci. Nanotechnol. **1**, 039801 (2010)

126. Two-particle quantum walks applied to the graph isomorphism problem, J. K. Gamble, M. Friesen, D. Zhou, R. Joynt, S. N. Coppersmith, arXiv:1002.3003, Phys. Rev. A **81**, 052313 (2010)
125. Disentanglement and decoherence from classical non-Markovian noise: Random telegraph noise, D. Zhou, A. Lang and R. Joynt, Quant. Inf. Proc. **9**, 727-747 (2010)
124. Theory of Electron Spin Relaxation in n-doped Quantum Wells, N. Harmon, W.O. Putikka, and R. Joynt, Phys. Rev. B **81**, 085320 (2010)
123. Noise-induced looping on the Bloch sphere: Oscillatory effects in dephasing of qubits subject to broad-spectrum noise, Dong Zhou and R. Joynt, arXiv:0907.0463, Phys. Rev. A **81**, 010103 (2010)
122. Spin relaxation in isotopically purified silicon quantum dots, M. Prada, R.H. Blick, R. Joynt, Physica E **42**, 639 (2010)
121. Charge sensing and controllable tunnel coupling in a Si/SiGe double quantum dot, C. B. Simmons, Madhu Thalakulam, B. M. Rosemeyer, B. J. Van Bael, E. K. Sackmann, D. E. Savage, M. G. Lagally, R. Joynt, M. Friesen, S. N. Coppersmith, and M. A. Eriksson, Nano Letters **9**, 3234 (2009)
120. Theory of electron spin decoherence in ZnO, N. Harmon, W.O. Putikka, and R. Joynt, Phys. Rev. B **79**, 115204 (2009)
119. Singlet-triplet relaxation in two-electron Silicon quantum dots, M. Prada, R.H. Blick, and R. Joynt, arXiv:0801.4898, (also selected for Virtual Journal of Nanoscale Science & Technology), Phys. Rev. B **77**, 115438 (2008)
118. Top-gated few-electron double quantum dot in Si/SiGe, N. Shaji, C. B. Simmons, L. J. Klein, Hua Qin, D. E. Savage, M.G. Lagally, S. N. Coppersmith, R. Joynt, M. Friesen, R. H. Blick, M. A. Eriksson, Physica **40**, 520523 (2008)
117. Spin blockade and lifetime-enhanced transport in a few-electron Si/SiGe double quantum dot, Nakul Shaji, C. B. Simmons, Madhu Thalakulam, Levente J. Klein, Hua Qin, H. Luo, D. E. Savage, M. G. Lagally, A. J. Rimberg, R. Joynt, M. Friesen, R. H. Blick, S. N. Coppersmith, M. A. Eriksson, arXiv:0708.0794, Nature Physics **4**, 540 (2008)
116. Electron spin coherence in Si/SiGe quantum wells, J. L. Truitt, K. A. Slinker, K. L. M. Lewis, D. E. Savage, C. Tahan, L. J. Klein, R. Joynt, M. G. Lagally, D. W. van der Weide, S. N. Coppersmith, M. Friesen and M. A. Eriksson, cond-mat/0411735, in *“Electron spin resonance and related phenomena in low*

*dimensional structures*” (Topics in Applied Physics Series, Vol. 115), ed. M. Fanciulli (Springer, 2008)

115. Transfer matrix solution of a model of qubit decoherence due to telegraph noise, Qiang-hua Wang, Bin Cheng, and Robert Joynt, quant-physics/0707.3857, Phys. Rev. A **78**, 022313 (2008), also selected for the August 18, 2008 issue of Virtual Journal of Nanoscale Science & Technology

114. Spin-Valley Kondo Effect in Multi-electron Silicon Quantum Dots, Shiue-yuan Shiau and Robert Joynt, arXiv:0708.0408, Phys. Rev. B **76**, 205314 (2007)

113. Controllable Valley Splitting in Si/SiGe Quantum Devices, Srijit Goswami, K. A. Slinker, Mark Friesen, L. M. McGuire, J. L. Truitt, Charles Tahan, L. J. Klein, J. O. Chu, P. M. Mooney, D. W. van der Weide, Robert Joynt, S. N. Coppersmith, and M.A. Eriksson, Nature Physics **3**, 41 (2007).

112. Valley Kondo Effect in Silicon Quantum Dots, by Shiue-yuan Shiau, Sucismita Chutia, and Robert Joynt, cond-mat/0611722, selected for the June 11, 2007 issue of Virtual Journal of Nanoscale Science & Technology, Phys. Rev. B **75**, 195345 (2007)

111. Energy Level Statistics of Quantum Dots, Chien-Yu Tsau, Diu Nghiem, Robert Joynt, and J. Woods Halley, J. Phys.: Cond. Matt. **19**, 186215 (2007)

110. Detection and measurement of the Dzyaloshinskii-Moriya interaction in double quantum dot systems, S. Chutia, M. Friesen, and R. Joynt, cond-mat/0601098, Phys. Rev. B **73**, 241304 (2006)

109. Exact solution of qubit decoherence models by a transfer matrix method, D. Nghiem and R. Joynt, Phys. Rev. A **73**, 032333 (2006), (also selected for the April 3, 2006 issue of Virtual Journal of Nanoscale Science & Technology and the April, 2006 issue of Virtual Journal and Quantum Information Science)

108. Quantum dots in Si/SiGe 2DEGs with Schottky top-gated leads, K.A. Slinker, K.L.M. Lewis, C.C. Haselby, S. Goswami, L.J. Klein, J.O. Chu, S.N. Coppersmith, Robert Joynt, R.H. Blick, Mark Friesen, and M.A. Eriksson, New Journal of Physics **7**, 246 (2005)

107. Rashba spin-orbit coupling and spin relaxation in silicon quantum wells C. Tahan and R. Joynt, Phys. Rev. B **71**, 075315 (2005)

106. Physically-motivated dynamical algorithms for the graph isomorphism problem, Shiue-yuan Shiau, Robert Joynt, and S.N. Coppersmith, Quantum Information and Computation **5**, 492 (2005)



105. Spin relaxation in SiGe two-dimensional electron gases, C. Tahan and R. Joynt, cond-mat/0401615, Phys. Rev. B **71**, 075315 (2005)
104. Coulomb blockade in a silicon/silicon-germanium two-dimensional electron gas quantum dot, L. J. Klein, K. Slinker, J. L. Truitt, S. Goswami, K. L. M. Lewis, S. N. Coppersmith, D. W. van der Weide, Mark Friesen, R. Blick, D. E. Savage, M. G. Lagally, Charles Tahan, Robert Joynt, M. A. Eriksson, Appl. Phys. Lett. **84**, 4047 (2004)
103. Solid State Quantum Computing using Spin Qubits in Silicon Quantum Dots, (Invited Review), M.A. Eriksson, R. Blick, S.N. Coppersmith, M. Friesen, R. Joynt, M.G. Lagally, D. W. van der Weide, A.J. Rumberg, P. Mooney, J. Chu, and S. Koester, Quantum Information Processing **3**, 133 (2004)
102. Spin-based Quantum Dot Quantum Computing in Silicon, M. A. Eriksson, M. Friesen, S. N. Coppersmith, R. Joynt, L. Klein, K. Slinker, C. Tahan, P. M. Mooney, J. O. Chu, and S. Koester, Quantum Information Processing **3**, 133 (2004)
101. Coulomb Blockade in a Si:SiGe Two-Dimensional Electron Gas Quantum Dot, L.J. Klein, K. Slinker, J.L. Truitt, S. Goswami, K.L.M. Lewis, S.N. Coppersmith, D.W. van der Weide, Mark Friesen, R. Blick, D.E. Savage, M.G. Lagally, Charlie Tahan, Robert Joynt, M.A. Eriksson, cond-mat/0404399, Appl. Phys. Lett. **84**, 4047 (2004)
100. Spin Readout and Initialization in a Semiconductor Quantum Dot, (with M. Friesen, M.A. Eriksson, and C. Tahan), cond-mat 0304422, Phys. Rev. Lett. **92**, 037901 (2004)
99. Theory of Optical Orientation in n-type Semiconductors, (with W.O. Putikka), cond-mat 0309155, Phys. Rev. B **70**, 113201 (2004)
98. One-dimensional quantum walks with absorbing boundaries (with E. Bach, M. Goldschen, S. Coppersmith and J. Watrous), Journal of Computer and System Sciences **69**, 562 (2004)
97. Electronic Inhomogeneity at Magnetic Domain Walls in Strongly-correlated Systems (with M. Rzchowski), cond-mat/0304287, Europhys. Lett. (2004)
96. Pseudo-Digital Qubits: A General Approach, M. Friesen, R. Joynt, and M. A. Eriksson, in Proc. 6th International Conf. on Quantum Communication., Measurement and Computing (QCMC02) (Rinton Press, Princeton, NJ, 2003)
95. A Relativistic Mean Field Model for Entrainment in General Relativistic Superfluid Neutron Stars, (with G. Comer), Phys. Rev. D **68**, 023002 (2003)

94. Pseudo-digital Qubits (with M. Friesen and M. Eriksson), *Appl. Phys. Lett.* **81**, 4619 (2002)
93. Ultrafast carrier relaxation dynamics in single-layer cuprates (with M.L. Schneider, et al.), *Europhysics Lett.* **60**, 460 (2002)
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90. The Superconducting Phases of  $UPT_3$  (with L. Taillefer), *Rev. Mod. Phys.* **74**, 235 (2002)
89. Thermodynamics of Superconducting  $UPT_3$  (with W.C. Wu), *Phys. Rev. B* **65**, 104502 (2002)
88. Comment on "Final-state interactions in photoemission: Energy loss by the exiting electron", *Phys. Rev. B* **65**, 077403 (2002)
87. Transport and the Order Parameter of  $Sr_2RuO_4$  (with W.C. Wu), *Phys. Rev. B* **64**, 100507 (2001)
86. Ohmic Losses in Valence-band Photoemission Experiments (with R. Haslinger) *J. Elec. Spectr. Rel. Phen.* **117-118**, 31 (2001)
85. Theory of the Transition at 0.2 K in Ni-Doped  $Bi_2Sr_2CaCu_2O_{8+x}$  *Phys. Rev. Lett.* **84**, 3954 (2000)
84. Can Inelastic Processes Mimic a Pseudogap in Photoemission Experiments ? *Chinese Journal of Physics* **38**, 295 (2000)
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82. The Spectral, Structural and Transport Properties of the Pseudogap System  $(TaSe_4)_2I$ , (with N. Shannon), *Solid State Comm.* **115**, 411 (2000)
81. Theory of Percolative Conduction in Polycrystalline High- temperature Superconductors (with R. Haslinger), *Phys. Rev. B* **61**, 4206 (2000)
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78. Analysis and Experimental Evidence of s+d Ordering in High- $T_c$  Superconductors (with J. Betouras), *Physica C: Superconductivity* **317-318**, 669 (1999)
77. c-axis Tunneling in YBCO (with R. Haslinger and J. Betouras), *J. Phys. Chem. Solids* **59**, 2026 (1998)
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74. Bound States and Impurity Averaging in Unconventional Superconductors, *J. Low Temp. Physics* **109**, 811 (1997)
73. Theory of Neutron Diffraction from the Flux Lattice of  $UPT_3$ , *Phys. Rev. Lett.* **78**, 3191 (1997)
72. Material-Specific Calculations of Gap Symmetry in High- $T_c$  Superconductors (with B. Koltenbah), *Repts. Prog. in Phys.* **60**, 23 (1997)
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66. Mixed Symmetry Superconductivity in Two-dimensional Fermi liquids (with K.A. Musaelian, J. Betouras, A.V. Chubukov), *Phys. Rev. B* **53**, 3598 (1996)
65. Theoretical Study of the Critical Current of  $YBa_2Cu_3O_{7-\delta}$  Bicrystals with Oxygen-deficient Grain Boundaries (with J. Betouras), *Physica C* **250**, 256 (1995)

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### **BOOKS EDITED**

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### **PATENTS**

1. U.S. Patent No. 6,597,010: "Solid-state quantum dot devices and quantum computing using nanostructured logic gates", awarded 7/22/2003. Inventors: M.A. Eriksson, M. Friesen, R. Joynt. M. Lagally, D. van der Weide, P. Rugheimer, and D. Savage.



2. U.S. Patent No. 7,137,697: “A self-contained, patterned quantum dot device for spin to charge transduction, readout and initialization, for use in quantum computing and quantum information processing”, awarded 11/14/2007. Inventors: M. Friesen, C. Tahan, R. Joynt, and M.A. Eriksson.

3. U.S. Patent Application No. P190129US01: “Silicon-germanium heterostructures with quantum wells having oscillatory germanium concentration profiles for increased valley splitting.” Inventors: M. Friesen, D. Savage, S.N. Coppersmith, R. Joynt, and M.A. Eriksson. Patent pending.

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Library Committee, Chair, 2001-2002; Chair, 2004  
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Department Secretary, 1986-7  
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Introductory Course Committee 1987-8  
Instructional Program Coordinator, 2006  
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Book reviews: *Science*, *American Journal of Physics*  
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Materials Research Science and Engineering Centers, March, 1995-97  
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International Advisory Board, Shanghai Center for Complex Physics, 2012-  
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