

Vito W. Scarola
Professor
Department of Physics, Virginia Tech
Blacksburg, VA 24061

tel: (540) 231-8757
orcid: [0002-8653-2723](https://orcid.org/0002-8653-2723)
email: scarola@vt.edu
scarola.phys.vt.edu

EDUCATION

Ph.D. in Physics The Pennsylvania State University Department of Physics Advisor: Professor J. K. Jain	August '97 - August '02
B.A. in Physics & Mathematics Boston University Department of Physics and Department of Mathematics	September '93 - May '97

POSITIONS HELD

Professor of Physics Virginia Tech: Department of Physics	June '21 - Present
Associate Professor of Physics Virginia Tech: Department of Physics	June '14 - June '21
Assistant Professor of Physics Virginia Tech: Department of Physics	September '09 - May '14
Joint Postdoctoral Research Associate UC Berkeley: Quantum Information & Computation Ctr. Advisor: Professor K. B. Whaley ETH Zürich: Computational Physics Ctr. Advisor: Professor M. Troyer	September '07 - August '09
Postdoctoral Research Associate The University of Maryland: Condensed Matter Theory Ctr. Advisor: Professor S. Das Sarma	September '02 - August '07

RESEARCH INTERESTS

Strongly Correlated Quantum Matter Quantum Computing Hardware Quantum Simulation	Ultracold Quantum Gases Quantum Hall Effects Numerical Methods
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MENTORED STUDENTS & POSTDOCTORAL ASSOCIATES

- Postdoctoral Associates: Dr. Wenhan Guo '26-Present, Dr. Hrushikesh Sable '23-present, Dr. Subrata Das '23-'25, Dr. Nathan Meyers '22-'25, Dr. Woo-Ram Lee '20-'25, Dr. Junhua Zhang '19-'22, Dr. Hoi-Yin Hui '15-'18, Dr. Fei Lin, '11-'14, Dr. Hao Wang, '09-'11
- Graduate Students: Ryan Scott '22-'26 (PhD), Zhangjie Qin '19-'24 (PhD), Mi Yan '13-'18 (PhD), Peter Raum '13-'19 (PhD), Mengsu Chen '13-'18 (PhD)
- Undergraduate Co-authors: Ben Stern '17-'18, Bhargav M. Kemburi, '09-'11

SYNERGISTIC ACTIVITIES

- Co-leader of the [ALPS](#) project for the distribution of pedagogical software
- Over seventy invited presentations at workshops, conferences, program reviews, and universities
- Conferences and Workshops Organized:
Quantum Graph States Arlington, VA, May '25
Building Entanglement for Quantum Information Processing Arlington, VA, March '19
The Next Generation of Quantum Simulations, French Polynesia, May '09
Monte Carlo Data Evaluation, Archiving and Provenance, ETH Zürich, Switzerland, Nov. '08

RECENT LEADERSHIP ROLES

- Steering Committee- ALPS Open-Source Software Package '24-Present
- Virginia Tech Point of Contact for the Mid-Atlantic Quantum Alliance '21-Present
- Chair of Colloquium Committee, Virginia Tech Physics '14-Present
- Chair-Virginia Tech College of Science Faculty Association '21-'22, member '20-'23
- Chair of Graduate Student Recruitment, Virginia Tech Physics '20-'24
- DAMOP program committee Chair for the APS March Meeting '18, member '17-'19

RESEARCH SUPPORT- Lead or Co PI on \$9.44M in grants with \$5.85M to Scarola

DOE Genesis July 2026 - April 2027 (Co PI-\$125K to Virginia Tech)	\$695K
Accelerating Measurement-Based Quantum Simulation Software Design with Artificial Intelligence	
NSF Jun 2026 - May 2028 (Lead PI-\$1.34M to Virginia Tech)	\$1.49M
POSE Phase II: Ecosystem of the Applications and Libraries for Physics Simulations (ALPS)	
DOE September 2025 - August 2028	\$695K
Measurement-Based Quantum Computing for Quantum Chemistry	
ARO/AFOSR/ONR/Virginia Tech - May 2025	\$90K
Funding for Workshop on Quantum Graph States	
NSF Jun 2024 - May 2025 (\$48K to Virginia Tech)	\$300K
POSE Phase I: Ecosystem of the Applications and Libraries for Physics Simulations (ALPS)	
AFOSR January 2023 - December 2026	\$495K
Innovations for the Construction and Detection of Quantum Phases with Neutral Atoms	
ARO October 2022 - August 2026 (Lead PI-\$277K to Virginia Tech)	\$590K
Topology and Emergence with Ultracold Atoms and Molecules	
AFOSR July 2021 - June 2024 (Lead PI-\$300K to Virginia Tech)	\$600K
Hybrid Quantum Algorithms for Quantum Many-body Physics	
ARO/NSA May 2020 -December 2023 (Lead PI-\$370K to Virginia Tech)	\$750K
The Computational Power of Quantum Matter: Algorithms and Characterization	
AFOSR May 2019 - April 2025 (Co PI-\$320K to Virginia Tech)	\$1.49M
Cluster-State Computing via Non-Destructive Imaging of Single Molecules	
AFOSR Sept. 2018 - Aug. 2022	\$450K
Modeling the Dynamics of Exotic Many-body States of Ultracold Atoms	
ARO May 2016 - May 2021 (Lead PI-\$270K to Virginia Tech)	\$450K
Chiral Spin Liquids and Other Topological Phases of Cold Atoms and Molecules in Optical Lattices	
ARO/AFOSR/Virginia Tech - Jan. 2019	\$69K
Funding for Workshop on Quantum Information in AMO Systems	
ICTAS October 2016 - June 2017	\$10K
ICTAS Diversity and Inclusion Seed Grant	
AFOSR April 2015 - Sept. 2018	\$270K
Band Engineering New Phases of Matter with Ultracold Atoms	
ORNL-CNMS - Graduate Student GO Program October 2014 - October 2016	\$50K
Phonon Theory of neutron scattering in strongly correlated and disordered materials	
ORNL-CNMS February 2013 - March 2014	10 Million CPU Hrs.
Disorder Enhanced Superconductivity in Optical Lattice Hubbard Models	
ARO-STIR July 2012 - April 2013	\$50K
Modeling the Stability of Topological Matter in Optical Lattices	
AFOSR September 2011 - April 2015 (Lead PI-\$280K to Virginia Tech)	\$560K
Controlled and Uncontrolled Disorder in Optical Lattice Emulators	
DARPA Young Faculty Award July 2011 - July 2014	\$300K
Emulating Strongly Interacting Quantum Matter with Optical Lattices	
Jeffress Memorial Trust June 2010 - June 2014	\$40K
Modeling Flat Band Nanostructures	

PUBLICATIONS & PREPRINTS (1 Nature, 1 Science, 1 PNAS, 1 PRX and 19 PRL)

87. Byungmin Kang, Hyunwoong Kwon, Vito W. Scarola, Kwon Park, *Scalable Quantum Algorithms for Gutzwiller Projection*. [arXiv:2606.06919](#)
86. Binayyak Roy, Vito Scarola, Sumanta Tewari, *Floquet-Engineered Parity Anomaly Staircase in a Cold Atom Dirac Lattice*. [arXiv:2606.05164](#)
85. V. W. Scarola, *Scalable Measurement-Based Quantum Simulation Patterns for Benchmarking*. [arXiv:2605.12502](#)
84. Hrushikesh Sable, Subrata Das, V. W. Scarola, *Quantum Hall correlations in tilted extended Bose-Hubbard chains*, [Physical Review A 113 L011304 \(2026\)](#). [arXiv:2510.27685](#)
83. Phil Russ, Mi Yan, Nicholas Kowalski, Laura Wadleigh, V. W. Scarola, Brian DeMarco, *Compressibility measurement of the thermal MI–BG transition in an optical lattice*. [arXiv:2506.16466](#)
82. Ryan Scott, Bryce Gadway, V. W. Scarola, *Generalized Pulse Design in Floquet Engineering: Application to Interacting Spin Systems*, [Physical Review A 112 063314 \(2025\)](#). [arXiv:2504.20154](#)
81. Zhangjie Qin, V.W. Scarola, *Scaling of Computational Order Parameters in Rydberg Atom Graph States*, [Physical Review A 111,042617 \(2025\)](#). [arXiv:2409.05941](#)
80. T. D. Stanescu, Sumanta Tewari, V. W. Scarola, *Topological superfluid phases of attractive Fermi-Hubbard model in narrow-band cold-atom optical lattices*, [Physical Review A 112,053307 \(2025\)](#). [arXiv:2408.16210](#)
79. Subrata Das, Vito W. Scarola, *Unveiling Supersolid Order via Vortex Trajectory Correlations*, [Physical Review Letters 134,163401 \(2025\)](#). [arXiv:2407.02481](#)
78. Hrushikesh Sable, Nathan M. Myers, V. W. Scarola, *Toward Quantum Analogue Simulation of Many-Body Supersymmetry with Rydberg Atom Arrays*, [Physical Review Letters 135, 033401 \(2025\)](#). [arXiv:2405.21073](#)
77. Woo-Ram Lee, Nathan M. Myers, V. W. Scarola, *Noise-resilient and resource-efficient hybrid algorithm for robust quantum gap estimation.*, [Physical Review A 111,022421 \(2025\)](#). [arXiv:2405.10306](#)
76. Nathan M. Myers, Hrushikesh Sable, V. W. Scarola, *Unifying Collisional Models and the Monte Carlo Metropolis Method: Algorithms for Dynamics of Open Quantum Systems*, [Physical Review E 111,014115 \(2025\)](#). [arXiv:2403.00197](#)

75. Zhangjie Qin, Daniel Azses, Eran Sela, Robert Raussendorf, V. W. Scarola, *Redundant string symmetry-based error correction: Demonstrations on quantum devices*, [Physical Review A 110,012465 \(2024\)](#). [arXiv:2310.12854](#)
74. Svetlana Kotochigova, Qingze Guan, Vito Scarola, Brian DeMarco, Bryce Gadway, *Rotational magic conditions for ultracold molecules in the presence of Raman and Rayleigh scattering*, [New Journal of Physics 26,063025 \(2024\)](#). [arXiv:2310.16215](#)
73. Nathan M. Myers, Ryan Scott, Kwon Park, V. W. Scarola, *Quantum simulation costs for Suzuki-Trotter decomposition of quantum many-body lattice models*, [Physical Review Research 5,023199 \(2023\)](#). [arXiv:2302.04698](#)
72. W.-R. Lee, R. Scott, and V. W. Scarola, *Hybrid quantum gap estimation algorithm using a filtered time series*, [Physical Review A 109, 052403 \(2024\)](#). [arXiv:2212.14039](#)
71. K. K. W. Ma, M. R. Peterson, V. W. Scarola, and K. Yang, *Fractional Quantum Hall Effect at the Filling Factor $\nu = 5/2$* , [Encyclopedia of Condensed Matter Physics](#), 2nd ed. Vol. 1 pp. 324-365 (2024) [arXiv:2208.07908](#)
70. W.-R. Lee, Z. Qin, R. Raussendorf, E. Sela, and V. W. Scarola, *Measurement-Based Time Evolution for Quantum Simulation of Fermionic Systems*, [Physical Review Research 4, L032013 \(2022\)](#). [arXiv:2110.14642](#)
69. J. Zhang, S. Tewari, and V. W. Scarola, *Stabilizing Topological Superfluidity of Lattice Fermions*, [Physical Review A 104, 033322 \(2021\)](#). [arXiv:2106.04583](#)
68. Z. Qin, W.-R. Lee, B. DeMarco, B. Gadway, S. Kotochigova, and V. W. Scarola, *Quantifying Entanglement in Cluster States Built with Error-Prone Interactions*, [Physical Review Research 3, 043118 \(2021\)](#). [arXiv:2104.12775](#)
67. P. T. Raum, G. Alvarez, T. Maier, and V. W. Scarola, *Two-Particle Correlation Functions in Cluster Perturbation Theory: Hubbard Spin Susceptibilities*, [Physical Review B 101, 75122 \(2020\)](#). [arXiv:1908.10361](#)
66. Q. Guan, M. Highman, E. J. Meier, G. R. Williams, V. Scarola, B. DeMarco, S. Kotochigova, and B. Gadway, *Nondestructive Dispersive Imaging of Rotationally Excited Ultracold Molecules*, [Physical Chemistry Chemical Physics 22, 20531 \(2020\)](#). [arXiv:2006.03484](#)
65. C. Zeng, T. D. Stanescu, C. Zhang, V. W. Scarola, and S. Tewari, *Majorana Corner Modes with Solitons in an Attractive Hubbard-Hofstadter Model of Cold Atom Optical Lattices*, [Physical Review Letters 123, 060402 \(2019\)](#). [arXiv:1901.04466](#)
64. W. Hutzler, J. J. McCord, P. T. Raum, B. Stern, H. Wang, V. W. Scarola, and M. R. Peterson, *Particle-Hole-Symmetric Model for a Paired Fractional Quantum Hall State in a Half-Filled Landau Level*, [Physical Review B 99, 045126 \(2019\)](#). [arXiv:1811.02646](#)

63. H.-Y. Hui, M. Chen, S. Tewari, and V. W. Scarola, *Flux-Driven Quantum Spin Liquids in Kagome Optical Lattices*, [Physical Review A 100, 053614 \(2019\)](#). [arXiv:1902.11301](#)
62. W. Xu, W. Morong, H.-Y. Hui, V. W. Scarola, and B. DeMarco, *Correlated Spin-Flip Tunneling in a Fermi Lattice Gas*, [Physical Review A 98, 023623 \(2018\)](#). [arXiv:1711.02061](#)
61. H.-Y. Hui, M. Chen, S. Tewari, and V. W. Scarola, *Chiral Topological Phases in Optical Lattices without Synthetic Fields*, [Physical Review A 98, 023609 \(2018\)](#). [arXiv:1712.10238](#)
60. M. Chen, H.-Y. Hui, S. Tewari, and V. W. Scarola, *Quantum Anomalous Hall State from Spatially Decaying Interactions on the Decorated Honeycomb Lattice*, [Physical Review B 97, 035114 \(2018\)](#). [arXiv:1705.05829](#)
59. M. Yan, Y. Qian, H.-Y. Hui, M. Gong, C. Zhang, and V. W. Scarola, *Spin-Orbit-Driven Transitions between Mott Insulators and Finite-Momentum Superfluids of Bosons in Optical Lattices*, [Physical Review A 96, 053619 \(2017\)](#). [arXiv:1312.4011](#)
58. M. Yan, H.-Y. Hui, and V. W. Scarola, *Dynamics of Disordered States in the Bose-Hubbard Model with Confinement*, [Physical Review A 95, 053624 \(2017\)](#). [arXiv:1601.06817](#)
57. M. Yan, H.-Y. Hui, M. Rigol, and V. W. Scarola, *Equilibration Dynamics of Strongly Interacting Bosons in 2D Lattices with Disorder*, [Physical Review Letters 119, 073002 \(2017\)](#). [arXiv:1606.03444](#)
56. P. T. Raum and V. W. Scarola, *Thermometry for Laughlin States of Ultracold Atoms*, [Physical Review Letters 118, 115302 \(2017\)](#). [arXiv:1609.01709](#)
55. F. Lin, T. A. Maier, and V. W. Scarola, *Disordered Supersolids in the Extended Bose-Hubbard Model*, [Scientific Reports 7, 12752 \(2017\)](#). [arXiv:1510.00291](#)
54. H. Y. Hui, Y. Zhang, C. Zhang, and V. W. Scarola, *Superfluidity in the Absence of Kinetics in Spin-Orbit-Coupled Optical Lattices*, [Physical Review A 95, 33603 \(2017\)](#). [arXiv:1606.08439](#)
53. M. Chen and V. W. Scarola, *Stability of Emergent Kinetics in Optical Lattices with Artificial Spin-Orbit Coupling*, [Physical Review A 94, 43601 \(2016\)](#). [arXiv:1607.00001](#)
52. F. Bao, Y. Tang, M. Summers, G. Zhang, C. Webster, V. Scarola, and T. A. Maier, *Fast and Efficient Stochastic Optimization for Analytic Continuation*, [Physical Review B 94, 125149 \(2016\)](#). [arXiv:1609.02578](#)
51. V. W. Scarola and B. DeMarco, *Dynamics of Hubbard-Band Quasiparticles in Disordered Optical Lattices*, [Physical Review A 92, 053628 \(2015\)](#). [arXiv:1503.07195](#)

50. K. Pakrouski, M. R. Peterson, T. Jolicoeur, V. W. Scarola, C. Nayak, and M. Troyer, *Phase Diagram of the $\nu = 5/2$ Fractional Quantum Hall Effect: Effects of Landau-Level Mixing and Nonzero Width*, [*Physical Review X* 5, 021004 \(2015\)](#). [arXiv:1411.1068](#)
49. M. Gong, Y. Qian, M. Yan, V. W. Scarola, and C. Zhang, *Dzyaloshinskii-Moriya Interaction and Spiral Order in Spin-Orbit Coupled Optical Lattices*, [*Scientific Reports* 5, 10050 \(2015\)](#). [arXiv:1205.6211](#)
48. M. Chen and V. W. Scarola, *Reordering Fractional Chern Insulators into Stripes of Fractional Charges with Long-Range Interactions*, [*Physical Review B* 92, 035138 \(2015\)](#). [arXiv:1409.5372](#)
47. V. W. Scarola, *Wave-Function Vortex Attachment via Matrix Products: Application to Atomic Fermi Gases in Flat Spin-Orbit Bands*, [*Physical Review B* 89, 115136 \(2014\)](#). [arXiv:1305.6852](#)
46. F. Lin, C. Zhang, and V. W. Scarola, *Emergent Kinetics and Fractionalized Charge in 1d Spin-Orbit Coupled Flatband Optical Lattices*, [*Physical Review Letters* 112, 110404 \(2014\)](#). [arXiv:1308.5601](#)
45. F. Lin and V. W. Scarola, *Enhancing the Thermal Stability of Majorana Fermions with Redundancy Using Dipoles in Optical Lattices*, [*Physical Review Letters* 111, 220401 \(2013\)](#). [arXiv:1210.0799](#)
44. E. Kozik, E. Burovski, V. W. Scarola, and M. Troyer, *Néel Temperature and Thermodynamics of the Half-Filled Three-Dimensional Hubbard Model by Diagrammatic Determinant Monte Carlo*, [*Physical Review B* 87, 205102 \(2013\)](#). [arXiv:1212.3027](#)
43. H. Wang and V. W. Scarola, *Models of Strong Interaction in Flat-Band Graphene Nanoribbons: Magnetic Quantum Crystals*, [*Physical Review B* 85, 75438 \(2012\)](#). [arXiv:1108.0088](#)
42. S. Tewari, J. D. Sau, V. W. Scarola, C. Zhang, and S. Das Sarma, *Probing a Topological Quantum Critical Point in Semiconductor- Superconductor Heterostructures*, [*Physical Review B* 85, 1 \(2012\)](#). [arXiv:1106.5506](#)
41. Y. Khorramzadeh, F. Lin, and V. W. Scarola, *Boson Core Compressibility*, [*Physical Review A* 85, 043610 \(2012\)](#). [arXiv:1201.0523](#)
40. B. Kemburi and V. Scarola, *Percolation-Enhanced Supersolids in the Extended Bose-Hubbard Model*, [*Physical Review B* 85, 20501 \(2012\)](#). [arXiv:1110.2957](#)
39. V. L. Campo, K. Capelle, C. Hooley, J. Quintanilla, and V. W. Scarola, *Thermal versus Quantum Fluctuations of Optical-Lattice Fermions*, [*Physical Review A* 85, 33644 \(2012\)](#). [arXiv:1107.4349](#)
38. H. Wang and V. W. Scarola, *Jastrow-Correlated Wave Functions for Flat-Band Lattices*, [*Physical Review B* 83, 245109 \(2011\)](#). [arXiv:1009.4194](#)

- 37. H. Wang, B. Bauer, M. Troyer, and V. W. Scarola, *Identifying Quantum Topological Phases through Statistical Correlation*, [Physical Review B 83, 115119 \(2011\)](#). [arXiv:1009.4692](#)
- 36. L. De Leo, J. S. Bernier, C. Kollath, A. Georges, and V. W. Scarola, *Thermodynamics of the Three-Dimensional Hubbard Model: Implications for Cooling Cold Atomic Gases in Optical Lattices*, [Physical Review A 83, 23606 \(2011\)](#). [arXiv:1009.2761](#)
- 35. B. Bauer et al., *The ALPS Project Release 2.0: Open Source Software for Strongly Correlated Systems*, [Journal of Statistical Mechanics: Theory and Experiment 2011, P05001 \(2011\)](#). [arXiv:1101.2646](#)
- 34. V. W. Scarola, C. May, M. R. Peterson, and M. Troyer, *Subband Engineering Even-Denominator Quantum Hall States*, [Physical Review B 82, 121304 \(2010\)](#). [arXiv:1004.1636](#)
- 33. K. Park, J. J. Heremans, V. W. Scarola, and D. Minic, *Robustness of Topologically Protected Surface States in Layering of Bi₂Te₃ Thin Films*, [Physical Review Letters 105, 186801 \(2010\)](#). [arXiv:1005.3476](#)
- 32. R. Jördens et al., *Quantitative Determination of Temperature in the Approach to Magnetic Order of Ultracold Fermions in an Optical Lattice*, [Physical Review Letters 104, 180401 \(2010\)](#). [arXiv:0912.3790](#)
- 31. C. M. Herdman, K. C. Young, V. W. Scarola, M. Sarovar, and K. B. Whaley, *Stroboscopic Generation of Topological Protection*, [Physical Review Letters 104, 230501 \(2010\)](#). [arXiv:0907.3988](#)
- 30. B. Bauer, M. Troyer, V. W. Scarola, and K. B. Whaley, *Distinguishing Phases with Ansatz Wave Functions*, [Physical Review B 81, 85118 \(2010\)](#). [arXiv:0903.1454](#)
- 29. V. W. Scarola, K. B. Whaley, and M. Troyer, *Thermal Canting of Spin-Bond Order*, [Physical Review B 79, 85113 \(2009\)](#). [arXiv:0808.1748](#)
- 28. V. W. Scarola, L. Pollet, J. Oitmaa, and M. Troyer, *Discerning Incompressible and Compressible Phases of Cold Atoms in Optical Lattices*, [Physical Review Letters 102, 135302 \(2009\)](#). [arXiv:0809.3239](#)
- 27. I. V. Kukushkin, J. H. Smet, V. W. Scarola, V. Umansky, and K. von Klitzing, *Dispersion of the Excitations of Fractional Quantum Hall States*, [Science 324, 1044 \(2009\)](#).
- 26. V. W. Scarola and S. Das Sarma, *Emulating Non-Abelian Topological Matter in Cold-Atom Optical Lattices*, [Physical Review A 77, 23612 \(2008\)](#). [arXiv:0707.4435](#)
- 25. C. Zhang, V. W. Scarola, and S. D. Sarma, *Initializing a Quantum Register from Mott-Insulator States in Optical Lattices*, [Physical Review A 75, 60301 \(2007\)](#). [arXiv:quant-ph/0701172](#)

24. C. Zhang, V. W. Scarola, and S. Das Sarma, *Probing N-Spin Correlations in Optical Lattices*, [Physical Review A 76, 023605 \(2007\)](#). [arXiv:cond-mat/0611689](#)
23. C. Zhang, V. W. Scarola, S. Tewari, and S. Das Sarma, *Anyonic Braiding in Optical Lattices*, [Proceedings of the National Academy of Sciences 104, 18415 \(2007\)](#). [arXiv:quant-ph/0609101](#)
22. V. W. Scarola and S. Das Sarma, *Edge Transport in 2D Cold Atom Optical Lattices*, [Physical Review Letters 98, 210403 \(2007\)](#). [arXiv:cond-mat/0612302](#)
21. S. Tewari, V. W. Scarola, T. Senthil, and S. D. Sarma, *Emergence of Artificial Photons in an Optical Lattice*, [Physical Review Letters 97, 200401 \(2006\)](#). [arXiv:cond-mat/0605154](#)
20. V. W. Scarola, E. Demler, and S. Das Sarma, *Searching for a Supersolid in Cold-Atom Optical Lattices*, [Physical Review A 73, 51601 \(2006\)](#). [arXiv:cond-mat/0602319](#)
19. V. W. Scarola and S. Das Sarma, *Cold-Atom Optical Lattices as Quantum Analog Simulators for Aperiodic One-Dimensional Localization without Disorder*, [Physical Review A 73, 041609 \(2006\)](#). [arXiv:cond-mat/0506415](#)
18. V. W. Scarola and S. D. Sarma, *Exchange Gate in Solid-State Spin-Quantum Computation: The Applicability of the Heisenberg Model*, [Physical Review A 71, 32340 \(2005\)](#). [arXiv:cond-mat/0410521](#)
17. V. W. Scarola, K. Park, and S. D. Sarma, *Pseudo-Spin Quantum Computation in Semiconductor Nanostructures*, [New Journal of Physics 7, 177 \(2005\)](#). [arXiv:cond-mat/0503257](#)
16. V. W. Scarola and S. Das Sarma, *Quantum Phases of the Extended Bose-Hubbard Hamiltonian: Possibility of a Supersolid State of Cold Atoms in Optical Lattices*, [Physical Review Letters 95, 033003 \(2005\)](#). [arXiv:cond-mat/0503378](#)
15. J. K. Jain, K. Park, M. R. Peterson, and V. W. Scarola, *Composite Fermion Theory of Excitations in the Fractional Quantum Hall Effect*, [Solid State Communications 135, 602 \(2005\)](#).
14. V. W. Scarola, K. Park, and S. Das Sarma, *Chirality in Quantum Computation with Spin Cluster Qubits*, [Physical Review Letters 93, 120503 \(2004\)](#). [arXiv:cond-mat/0403444](#)
13. V. W. Scarola, K. Park, and S. D. Sarma, *Pseudospin Quantum Computation in Semiconductor Nanostructures*, [Physical Review Letters 91, 167903 \(2003\)](#). [arXiv:cond-mat/0304225](#)
12. K. Park, V. W. Scarola, and S. Das Sarma, *Even-Odd Effect in Spontaneously Coherent Bilayer Quantum Hall Droplets*, [Physical Review Letters 91, 026804 \(2003\)](#). [arXiv:cond-mat/0212106](#)
11. V. W. Scarola and G. D. Mahan, *Phonon Drag Effect in Single-Walled Carbon Nanotubes*, [Physical Review B 66, 2054051 \(2002\)](#). [arXiv:cond-mat/0211120](#)

10. V. W. Scarola, S. Y. Lee, and J. K. Jain, *Excitation Gaps of Incompressible Composite Fermion States: Approach to the Fermi Sea*, [Physical Review B 66, 1553201 \(2002\)](#).
9. V. W. Scarola, J. K. Jain, and E. H. Rezayi, *Possible Pairing-Induced Even-Denominator Fractional Quantum Hall Effect in the Lowest Landau Level*, [Physical Review Letters 88, 2168041 \(2002\)](#). [arXiv:cond-mat/0203287](#)
8. V. W. Scarola, S. Y. Lee, and J. K. Jain, *Possible New Phases of Composite Fermions.*, [International Journal of Modern Physics B 16, 2946 \(2002\)](#).
7. S. Y. Lee, V. W. Scarola, and J. K. Jain, *Structures for Interacting Composite Fermions: Stripes, Bubbles, and Fractional Quantum Hall Effect*, [Physical Review B 66, 853361 \(2002\)](#). [arXiv:cond-mat/0311513](#)
6. V. W. Scarola and J. K. Jain, *Phase Diagram of Bilayer Composite Fermion States*, [Physical Review B 64, 853131 \(2001\)](#). [arXiv:cond-mat/0011511](#)
5. S.-Y. Lee, V. W. Scarola, and J. K. Jain, *Stripe Formation in the Fractional Quantum Hall Regime*, [Physical Review Letters 87, 256803 \(2001\)](#). [arXiv:cond-mat/0104210](#)
4. J. K. Jain, R. K. Kamilla, K. Park, and V. W. Scarola, *Interacting Composite Fermions*, [Solid State Communications 117, 117 \(2001\)](#).
3. V. W. Scarola, K. Park, and J. K. Jain, *Cooper Instability of Composite Fermions*, [Nature 406, 863 \(2000\)](#). [arXiv:cond-mat/0012030](#)
2. V. W. Scarola, K. Park, and J. K. Jain, *Rotons of Composite Fermions: Comparison between Theory and Experiment*, [Physical Review B 61, 13064 \(2000\)](#). [arXiv:cond-mat/9910491](#)
1. V. W. Scarola, K. Park, and J. K. Jain, *Excitonic Collapse of Higher Landau Level Fractional Quantum Hall Effect*, [Physical Review B 62, R16259 \(2000\)](#). [arXiv:cond-mat/0011512](#)