

# Stanford

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## Steven Kivelson

Prabhu Goel Family Professor

Physics

### CONTACT INFORMATION

- **Administrative Contact**

Noelle Rudolph

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### Bio

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#### BIO

##### RESEARCH INTERESTS:

How do the interactions between the vastly many electrons in solids produce the emergent phenomena we recognize as the macroscopic behavior of the materials we encounter in everyday life, and in the exotic materials and devices we engineer in the laboratory?

The central source of intellectual vitality and practical importance of condensed matter physics is the richness and diversity of behaviors exhibited by strongly interacting systems with many degrees of freedom, ranging from the collective behavior of neurons in the brain to the collective condensation of Cooper pairs that produce the macroscopic quantum phenomena associated with superconducting order.

The main thrust of the research carried out by Professor Kivelson is the search for theoretical characterization of qualitatively new behaviors of interacting electrons (i.e., new states of matter) as well as new regimes of parameters in which familiar states of matter behave in new and different ways. In particular, he seeks to explore; qualitatively...the relation between the microscopic interactions between electrons and the effective parameters that control the macroscopic behavior of solids.

##### Current areas of Focus:

- theory of quantum liquid crystalline phases of highly correlated electronic fluids
- intertwined orders and the theory of high temperature superconductivity
- theory of spin liquids and other fractionalized quantum phases
- theory of the glass transition in super cool liquids

#### ACADEMIC APPOINTMENTS

- Professor, Physics
- Principal Investigator, Stanford Institute for Materials and Energy Sciences

## ADMINISTRATIVE APPOINTMENTS

- Editor in Chief, Nature Partner Journal Quantum Materials, (2016- present)
- Prabhu Goel Family Professor of Physics, Stanford University, (2012- present)
- Professor, Physics, Stanford University, (2004- present)
- Professor, Physics and Astronomy, UCLA, (1988-2004)
- Professor of Physics, State University of New York at Stony Brook, (1988-1989)
- Associate Professor of Physics, State University of New York at Stony Brook, (1986-1988)
- Assistant Professor of Physics, State University of New York, (1982-1986)

## PROFESSIONAL EDUCATION

- Ph.D., Harvard University , Physics (1979)

## LINKS

- Defining "Emergence" in Physics: <http://www.nature.com/articles/npjquantmats201624>
- Understanding Complexity: <https://www.nature.com/articles/s41567-018-0136-6>
- Kivelson Group Web Link: <https://glam.stanford.edu/kivelson-group>

## Teaching

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### COURSES

#### 2021-22

- Mathematical Methods for Physics: PHYSICS 112 (Win)
- Partial Differential Equations of Mathematical Physics: PHYSICS 111 (Aut)

#### 2020-21

- Condensed Matter Seminar: APPPHYS 470 (Aut, Win, Spr)
- Partial Differential Equations of Mathematical Physics: PHYSICS 111 (Aut)
- Topics in Modern Condensed Matter Theory II: Open Problems in the theory of metals & superconductor: PHYSICS 471 (Win)

#### 2019-20

- Condensed Matter Theory I: PHYSICS 372 (Win)
- Partial Differential Equations of Mathematical Physics: PHYSICS 111 (Aut)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Logan Bishop-Van Horn, Ben Foutty, Cheryne Jonay, Erik Kountz, Fangze Liu, Pavel Nosov, David Saykin, Anisha Singh, Matthew Sorensen, Ta Tang, Wen Wang, Kaan Yay, Jiachen Yu, Victor Zhang

#### Postdoctoral Faculty Sponsor

John Sous

#### Doctoral Dissertation Advisor (AC)

Vladimir Calvera, Zhaoyu Han, Kyung-Su Kim, Akshat Pandey, Andrew Yuan, Sijia Zhao

## Publications

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### PUBLICATIONS

- **Heuristic bounds on superconductivity and how to exceed them** *NPJ QUANTUM MATERIALS*  
Hofmann, J. S., Chowdhury, D., Kivelson, S. A., Berg, E.  
2022; 7 (1)
- **Quantum critical fluctuations in an Fe-based superconductor** *COMMUNICATIONS PHYSICS*  
Jost, D., Peis, L., He, G., Baum, A., Gepraegs, S., Palmstrom, J. C., Ikeda, M. S., Fisher, I. R., Wolf, T., Lederer, S., Kivelson, S. A., Hackl, R.  
2022; 5 (1)
- **Correlated Hofstadter spectrum and flavour phase diagram in magic-angle twisted bilayer graphene** *NATURE PHYSICS*  
Yu, J., Foutty, B. A., Han, Z., Barber, M. E., Schattner, Y., Watanabe, K., Taniguchi, T., Phillips, P., Shen, Z., Kivelson, S. A., Feldman, B. E.  
2022
- **Generic character of charge and spin density waves in superconducting cuprates.** *Proceedings of the National Academy of Sciences of the United States of America*  
Lee, S., Huang, E. W., Johnson, T. A., Guo, X., Husain, A. A., Mitrano, M., Lu, K., Zakrzewski, A. V., de la Peña, G. A., Peng, Y., Huang, H., Lee, S. J., Jang, et al  
2022; 119 (15): e2119429119
- **Pair density wave and reentrant superconducting tendencies originating from valley polarization** *PHYSICAL REVIEW B*  
Han, Z., Kivelson, S. A.  
2022; 105 (10)
- **Pair-density-wave in the strong coupling limit of the Holstein-Hubbard model** *NPJ QUANTUM MATERIALS*  
Huang, K. S., Han, Z., Kivelson, S. A., Yao, H.  
2022; 7 (1)
- **Stripe order enhanced superconductivity in the Hubbard model.** *Proceedings of the National Academy of Sciences of the United States of America*  
Jiang, H., Kivelson, S. A.  
1800; 119 (1)
- **The Hubbard Model** *ANNUAL REVIEW OF CONDENSED MATTER PHYSICS*  
Arovas, D. P., Berg, E., Kivelson, S. A., Raghu, S.  
2022; 13: 239-274
- **Elastocaloric signature of nematic fluctuations.** *Proceedings of the National Academy of Sciences of the United States of America*  
Ikeda, M. S., Worasaran, T., Rosenberg, E. W., Palmstrom, J. C., Kivelson, S. A., Fisher, I. R.  
2021; 118 (37)
- **High Temperature Superconductivity in a Lightly Doped Quantum Spin Liquid** *PHYSICAL REVIEW LETTERS*  
Jiang, H., Kivelson, S. A.  
2021; 127 (9)
- **High Temperature Superconductivity in a Lightly Doped Quantum Spin Liquid.** *Physical review letters*  
Jiang, H. C., Kivelson, S. A.  
2021; 127 (9): 097002
- **Strain-induced time reversal breaking and half quantum vortices near a putative superconducting tetracritical point in Sr<sub>2</sub>RuO<sub>4</sub>** *PHYSICAL REVIEW B*  
Yuan, A. C., Berg, E., Kivelson, S. A.  
2021; 104 (5)
- **Nematic antiferromagnetism and deconfined criticality from the interplay between electron-phonon and electron-electron interactions** *PHYSICAL REVIEW B*  
Wang, C., Schattner, Y., Kivelson, S. A.  
2021; 104 (8)
- **Superconductor-to-metal transition in overdoped cuprates** *NPJ QUANTUM MATERIALS*  
Li, Z., Kivelson, S. A., Lee, D.

2021; 6 (1)

- **The quantum Hall effect in the absence of disorder** *NPJ QUANTUM MATERIALS*  
Kim, K., Kivelson, S. A.  
2021; 6 (1)
- **Npj Quantum Materials as a symbol of international scientific cooperation** *NPJ QUANTUM MATERIALS*  
Kivelson, S.  
2021; 6 (1): 0
- **Discovery of an insulating ferromagnetic phase of electrons in two dimensions.** *Proceedings of the National Academy of Sciences of the United States of America*  
Kim, K., Kivelson, S. A.  
2021; 118 (2)
- **Nematic quantum criticality in an Fe-based superconductor revealed by strain-tuning.** *Science (New York, N.Y.)*  
Worasaran, T., Ikeda, M. S., Palmstrom, J. C., Straquadine, J. A., Kivelson, S. A., Fisher, I. R.  
2021; 372 (6545): 973-977
- **Robust superconductivity intertwined with charge density wave and disorder in Pd-intercalated ErTe3** *PHYSICAL REVIEW RESEARCH*  
Fang, A., Singh, A. G., Straquadine, J. W., Fisher, I. R., Kivelson, S. A., Kapitulnik, A.  
2020; 2 (4)
- **Strong Coupling Limit of the Holstein-Hubbard Model.** *Physical review letters*  
Han, Z., Kivelson, S. A., Yao, H.  
2020; 125 (16): 167001
- **Strong Coupling Limit of the Holstein-Hubbard Model** *PHYSICAL REVIEW LETTERS*  
Han, Z., Kivelson, S. A., Yao, H.  
2020; 125 (16)
- **Hubbard ladders at small U revisited** *PHYSICAL REVIEW B*  
Gannot, Y., Jiang, Y., Kivelson, S. A.  
2020; 102 (11)
- **A proposal for reconciling diverse experiments on the superconducting state in Sr2RuO4** *NPJ QUANTUM MATERIALS*  
Kivelson, S., Yuan, A., Ramshaw, B., Thomale, R.  
2020; 5 (1)
- **Eliashberg theory of phonon-mediated superconductivity - When it is valid and how it breaks down** *ANNALS OF PHYSICS*  
Chubukov, A., Abanov, A., Esterlis, I., Kivelson, S. A.  
2020; 417
- **Phases of frustrated quantum antiferromagnets on the square and triangular lattices** *PHYSICAL REVIEW B*  
Yu, Y., Kivelson, S. A.  
2020; 101 (21)
- **Enhanced Thermal Hall Effect in Nearly Ferroelectric Insulators.** *Physical review letters*  
Chen, J. Y., Kivelson, S. A., Sun, X. Q.  
2020; 124 (16): 167601
- **Enhanced Thermal Hall Effect in Nearly Ferroelectric Insulators** *PHYSICAL REVIEW LETTERS*  
Chen, J., Kivelson, S. A., Sun, X.  
2020; 124 (16)
- **The Physics of Pair-Density Waves: Cuprate Superconductors and Beyond** *ANNUAL REVIEW OF CONDENSED MATTER PHYSICS, VOL 11, 2020*  
Agterberg, D. F., Davis, J., Edkins, S. D., Fradkin, E., Van Harlingen, D. J., Kivelson, S. A., Lee, P. A., Radzihovsky, L., Tranquada, J. M., Wang, Y., Marchetti, M. C., Mackenzie, A. P.  
2020; 11: 231-70
- **Disorder-induced suppression of charge density wave order: STM study of Pd-intercalated ErTe3** *PHYSICAL REVIEW B*

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- Fang, A., Straquadine, J. W., Fisher, I. R., Kivelson, S. A., Kapitulnik, A.  
2019; 100 (23)
- **Physics of Superconducting Transition Temperatures** *JOURNAL OF SUPERCONDUCTIVITY AND NOVEL MAGNETISM*  
Kivelson, S. A.  
2019
  - **John Robert Schrieffer (1931-2019)**. *Science (New York, N.Y.)*  
Scalapino, D., Kivelson, S. A.  
2019; 365 (6459): 1253
  - **John Robert Schrieffer (1931-2019)** *SCIENCE*  
Scalapino, D., Kivelson, S.  
2019; 365 (6459): 1253
  - **Fermi surface reconstruction by a charge density wave with finite correlation length** *PHYSICAL REVIEW B*  
Gannot, Y., Ramshaw, B. J., Kivelson, S. A.  
2019; 100 (4)
  - **Shoucheng Zhang (1963-2018)** *OBITUARY NATURE*  
Kivelson, S.  
2019; 565 (7741): 568
  - **Colloquium: Anomalous metals: Failed superconductors** *REVIEWS OF MODERN PHYSICS*  
Kapitulnik, A., Kivelson, S. A., Spivak, B.  
2019; 91 (1)
  - **Generalization of Anderson's theorem for disordered superconductors** *PHYSICAL REVIEW B*  
Dodaro, J. F., Kivelson, S. A.  
2018; 98 (17)
  - **Superconductivity in the doped t - J model: Results for four-leg cylinders** *PHYSICAL REVIEW B*  
Jiang, H., Weng, Z., Kivelson, S. A.  
2018; 98 (14)
  - **Spatially modulated susceptibility in thin film La<sub>2-x</sub>BaxCuO<sub>4</sub>** *PHYSICAL REVIEW B*  
Davis, S. I., Ullah, R. R., Adamo, C., Watson, C. A., Kirtley, J. R., Beasley, M. R., Kivelson, S. A., Moler, K. A.  
2018; 98 (1)
  - **Pair density waves in superconducting vortex halos** *PHYSICAL REVIEW B*  
Wang, Y., Edkins, S. D., Hamidian, M. H., Davis, J., Fradkin, E., Kivelson, S. A.  
2018; 97 (17)
  - **Understanding complexity** *NATURE PHYSICS*  
Kivelson, S., Kivelson, S.  
2018; 14 (5): 426–27
  - **Transverse fields to tune an Ising-nematic quantum phase transition** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Maharaj, A. V., Rosenberg, E. W., Hristov, A. T., Berg, E., Fernandes, R. M., Fisher, I. R., Kivelson, S. A.  
2017; 114 (51): 13430–34
  - **Superconductivity in engineered two-dimensional electron gases** *PHYSICAL REVIEW B*  
Chubukov, A. V., Kivelson, S. A.  
2017; 96 (17)
  - **Avoided criticality and slow relaxation in frustrated two-dimensional models** *PHYSICAL REVIEW B*  
Esterlis, I., Kivelson, S. A., Tarjus, G.  
2017; 96 (14)

- **Non-quasiparticle transport and resistivity saturation: a view from the large-N limit** (vol 2, 58, 2017) *NPJ QUANTUM MATERIALS*  
Werman, Y., Kivelson, S. A., Berg, E.  
2017; 2
- **Time to fix science prizes** *NATURE PHYSICS*  
Sondhi, S., Kivelson, S.  
2017; 13 (9): 822
- **Vestigial nematicity from spin and/or charge order in the cuprates** *PHYSICAL REVIEW B*  
Nie, L., Maharaj, A. V., Fradkin, E., Kivelson, S. A.  
2017; 96 (8)
- **Fractional charge and emergent mass hierarchy in diagonal two-leg t-J cylinders** *PHYSICAL REVIEW B*  
Jiang, Y., Jiang, H., Yao, H., Kivelson, S. A.  
2017; 95 (24)
- **Charge-4e superconductors: A Majorana quantum Monte Carlo study** *PHYSICAL REVIEW B*  
Jiang, Y., Li, Z., Kivelson, S. A., Yao, H.  
2017; 95 (24)
- **Superconductivity and non-Fermi liquid behavior near a nematic quantum critical point** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Lederer, S., Schattner, Y., Berg, E., Kivelson, S. A.  
2017; 114 (19): 4905-4910
- **Intertwined order in a frustrated four-leg t - J cylinder** *PHYSICAL REVIEW B*  
Dodaro, J. F., Jiang, H., Kivelson, S. A.  
2017; 95 (15)
- **Non-quasiparticle transport and resistivity saturation: a view from the large-N limit** *NPJ QUANTUM MATERIALS*  
Werman, Y., Kivelson, S. A., Berg, E.  
2017; 2
- **Ideal charge-density-wave order in the high-field state of superconducting YBCO** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Jang, H., Lee, W., Nojiri, H., Matsuzawa, S., Yasumura, H., Nie, L., Maharaj, A. V., Gerber, S., Liu, Y., Mehta, A., Bonn, D. A., Liang, R., Hardy, et al  
2016; 113 (51): 14645-14650
- **Defining emergence in physics** *NPJ QUANTUM MATERIALS*  
Kivelson, S., Kivelson, S. A.  
2016; 1
- **Ising Nematic Quantum Critical Point in a Metal: A Monte Carlo Study** *PHYSICAL REVIEW X*  
Schattner, Y., Lederer, S., Kivelson, S. A., Berg, E.  
2016; 6 (3)
- **Why do we need another journal?** *NPJ QUANTUM MATERIALS*  
Kivelson, S.  
2016; 1
- **Cold-spots and glassy nematicity in underdoped cuprates** *PHYSICAL REVIEW B*  
Lee, K., Kivelson, S. A., Kim, E.  
2016; 94 (1)
- **What really happens in strongly correlated superconductors: insights from a quantum Monte-Carlo study of high temperature superconductivity in FeSe films** *SCIENCE BULLETIN*  
Kivelson, S. A.  
2016; 61 (12): 911-13
- **Ubiquitous signatures of nematic quantum criticality in optimally doped Fe-based superconductors** *SCIENCE*

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- Kuo, H., Chu, J., Palmstrom, J. C., Kivelson, S. A., Fisher, I. R.  
2016; 352 (6288): 958-962
- **Electronic pair binding and Hund's rule violations in doped C-60** *PHYSICAL REVIEW B*  
Jiang, H., Kivelson, S.  
2016; 93 (16)
  - **Necessity of Time-Reversal Symmetry Breaking for the Polar Kerr Effect in Linear Response.** *Physical review letters*  
Cho, W., Kivelson, S. A.  
2016; 116 (9): 093903-?
  - **Quantum oscillations in a bilayer with broken mirror symmetry: A minimal model for YBa<sub>2</sub>Cu<sub>3</sub>O<sub>6+δ</sub>** *PHYSICAL REVIEW B*  
Maharaj, A. V., Zhang, Y., Ramshaw, B. J., Kivelson, S. A.  
2016; 93 (9)
  - **Vestigial chiral and charge orders from bidirectional spin-density waves: Application to the iron-based superconductors** *PHYSICAL REVIEW B*  
Fernandes, R. M., Kivelson, S. A., Berg, E.  
2016; 93 (1)
  - **Self-duality and a Hall-insulator phase near the superconductor-to-insulator transition in indium-oxide films** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Breznay, N. P., Steiner, M. A., Kivelson, S. A., Kapitulnik, A.  
2016; 113 (2): 280-285
  - **Self-duality and a Hall-insulator phase near the superconductor-to-insulator transition in indium-oxide films.** *Proceedings of the National Academy of Sciences of the United States of America*  
Breznay, N. P., Steiner, M. A., Kivelson, S. A., Kapitulnik, A.  
2016; 113 (2): 280-5
  - **Three-dimensional charge density wave order in YBa<sub>2</sub>Cu<sub>3</sub>O<sub>6.67</sub> at high magnetic fields** *SCIENCE*  
Gerber, S., Jang, H., Nojiri, H., Matsuzawa, S., Yasumura, H., Bonn, D. A., Liang, R., Hardy, W. N., Islam, Z., Mehta, A., Song, S., Sikorski, M., Stefanescu, et al  
2015; 350 (6263): 949-952
  - **Fluctuating orders and quenched randomness in the cuprates** *PHYSICAL REVIEW B*  
Nie, L., Sierens, L. E., Melko, R. G., Sachdev, S., Kivelson, S. A.  
2015; 92 (17)
  - **Macroscopic character of composite high-temperature superconducting wires** *PHYSICAL REVIEW B*  
Kivelson, S. A., Spivak, B.  
2015; 92 (18)
  - **Nematicity and quantum paramagnetism in FeSe** *NATURE PHYSICS*  
Wang, F., Kivelson, S. A., Lee, D.  
2015; 11 (11): 959-963
  - **One Hole in the Two-Leg t-J Ladder and Adiabatic Continuity to the Noninteracting Limit** *PHYSICAL REVIEW LETTERS*  
White, S. R., Scalapino, D. J., Kivelson, S. A.  
2015; 115 (5)
  - **Colloquium: Theory of intertwined orders in high temperature superconductors** *REVIEWS OF MODERN PHYSICS*  
Fradkin, E., Kivelson, S. A., Tranquada, J. M.  
2015; 87 (2): 457-482
  - **Enhancement of Superconductivity near a Nematic Quantum Critical Point** *PHYSICAL REVIEW LETTERS*  
Lederer, S., Schattner, Y., Berg, E., Kivelson, S. A.  
2015; 114 (9)
  - **From quantum matter to high-temperature superconductivity in copper oxides** *NATURE*  
Keimer, B., Kivelson, S. A., Norman, M. R., Uchida, S., Zaanen, J.  
2015; 518 (7538): 179-186

- **Disruption of quantum oscillations by an incommensurate charge density wave** *PHYSICAL REVIEW B*  
Zhang, Y., Maharaj, A. V., Kivelson, S.  
2015; 91 (8)
- **Coherent transmutation of electrons into fractionalized anyons** *SCIENCE*  
Barkeshli, M., Berg, E., Kivelson, S.  
2014; 346 (6210): 722-725
- **Coherent transmutation of electrons into fractionalized anyons.** *Science*  
Barkeshli, M., Berg, E., Kivelson, S.  
2014; 346 (6210): 722-725
- **Quenched disorder and vestigial nematicity in the pseudogap regime of the cuprates** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Nie, L., Tarjus, G., Kivelson, S. A.  
2014; 111 (22): 7980-7985
- **Quenched disorder and vestigial nematicity in the pseudogap regime of the cuprates.** *Proceedings of the National Academy of Sciences of the United States of America*  
Nie, L., Tarjus, G., Kivelson, S. A.  
2014; 111 (22): 7980-7985
- **Correlations and renormalization of the electron-phonon coupling in the honeycomb Hubbard ladder and superconductivity in polyacene** *PHYSICAL REVIEW B*  
Karakonstantakis, G., Liu, L., Thomale, R., Kivelson, S. A.  
2013; 88 (22)
- **Evidence from tunneling spectroscopy for a quasi-one-dimensional origin of superconductivity in Sr<sub>2</sub>RuO<sub>4</sub>** *PHYSICAL REVIEW B*  
Firmo, I. A., Lederer, S., Lupien, C., Mackenzie, A. P., Davis, J. C., Kivelson, S. A.  
2013; 88 (13)
- **Field theory of the quantum Hall nematic transition** *PHYSICAL REVIEW B*  
Maciejko, J., Hsu, B., Kivelson, S. A., Park, Y., Sondhi, S. L.  
2013; 88 (12)
- **Band structure effects on the superconductivity in Hubbard models** *PHYSICAL REVIEW B*  
Cho, W., Thomale, R., Raghu, S., Kivelson, S. A.  
2013; 88 (6)
- **Gapless spin liquids: Stability and possible experimental relevance** *PHYSICAL REVIEW B*  
Barkeshli, M., Yao, H., Kivelson, S. A.  
2013; 87 (14)
- **Kerr effect as evidence of gyrotropic order in the cuprates** *PHYSICAL REVIEW B*  
Hosur, P., Kapitulnik, A., Kivelson, S. A., Orenstein, J., Raghu, S.  
2013; 87 (11)
- **Microscopic Model of Quasiparticle Wave Packets in Superfluids, Superconductors, and Paired Hall States** *PHYSICAL REVIEW LETTERS*  
Parameswaran, S. A., Kivelson, S. A., Shankar, R., Sondhi, S. L., Spivak, B. Z.  
2012; 109 (23)
- **HIGH-TEMPERATURE SUPERCONDUCTIVITY Ineluctable complexity** *NATURE PHYSICS*  
Fradkin, E., Kivelson, S. A.  
2012; 8 (12): 864–66
- **Charge and spin collective modes in a quasi-one-dimensional model of Sr<sub>2</sub>RuO<sub>4</sub>** *PHYSICAL REVIEW B*  
Chung, S. B., Raghu, S., Kapitulnik, A., Kivelson, S. A.  
2012; 86 (6)
- **Typology for quantum Hall liquids** *PHYSICAL REVIEW B*



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- Parameswaran, S. A., Kivelson, S. A., Rezayi, E. H., Simon, S. H., Sondhi, S. L., Spivak, B. Z.  
2012; 85 (24)
- **Exact Spin Liquid Ground States of the Quantum Dimer Model on the Square and Honeycomb Lattices** *PHYSICAL REVIEW LETTERS*  
Yao, H., Kivelson, S. A.  
2012; 108 (24)
  - **The weakly coupled Pfaffian as a type I quantum hall liquid** *International Workshop on Electronic Crystals (ECRYS)*  
Parameswaran, S. A., Kivelson, S. A., Sondhi, S. L., Spivak, B. Z.  
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  - **Observable NMR signal from circulating current order in YBCO** *PHYSICAL REVIEW B*  
Lederer, S., Kivelson, S. A.  
2012; 85 (15)
  - **Pressure effects on magnetically driven electronic nematic states in iron pnictide superconductors** *PHYSICAL REVIEW B*  
Hu, J., Setty, C., Kivelson, S.  
2012; 85 (10)
  - **Phases of the Infinite U Hubbard Model on Square Lattices** *PHYSICAL REVIEW LETTERS*  
Liu, L., Yao, H., Berg, E., White, S. R., Kivelson, S. A.  
2012; 108 (12)
  - **Electronic liquid crystalline phases in a spin-orbit coupled two-dimensional electron gas** *PHYSICAL REVIEW B*  
Berg, E., Rudner, M. S., Kivelson, S. A.  
2012; 85 (3)
  - **Effects of longer-range interactions on unconventional superconductivity** *PHYSICAL REVIEW B*  
Raghu, S., Berg, E., Chubukov, A. V., Kivelson, S. A.  
2012; 85 (2)
  - **Thermodynamics of phase formation in the quantum critical metal Sr<sub>3</sub>Ru<sub>2</sub>O<sub>7</sub>** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Rost, A. W., Grigera, S. A., Bruin, J. A., Perry, R. S., Tian, D., Raghu, S., Kivelson, S. A., Mackenzie, A. P.  
2011; 108 (40): 16549-16553
  - **Fermi-surface reconstruction in a smectic phase of a high-temperature superconductor** *PHYSICAL REVIEW B*  
Yao, H., Lee, D., Kivelson, S.  
2011; 84 (1)
  - **Hydrodynamic Description of Transport in Strongly Correlated Electron Systems** *PHYSICAL REVIEW LETTERS*  
Andreev, A. V., Kivelson, S. A., Spivak, B.  
2011; 106 (25)
  - **Weakly Coupled Pfaffian as a Type I Quantum Hall Liquid** *PHYSICAL REVIEW LETTERS*  
Parameswaran, S. A., Kivelson, S. A., Sondhi, S. L., Spivak, B. Z.  
2011; 106 (23)
  - **From a Single-Band Metal to a High-Temperature Superconductor via Two Thermal Phase Transitions** *SCIENCE*  
He, R., Hashimoto, M., Karapetyan, H., Koralek, J. D., Hinton, J. P., Testaud, J. P., Nathan, V., Yoshida, Y., Yao, H., Tanaka, K., Meevasana, W., Moore, R. G., Lu, et al  
2011; 331 (6024): 1579-1583
  - **Superconductivity from repulsive interactions in the two-dimensional electron gas** *PHYSICAL REVIEW B*  
Raghu, S., Kivelson, S. A.  
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  - **Enhanced pairing in the checkerboard Hubbard ladder** *PHYSICAL REVIEW B*  
Karakonstantakis, G., Berg, E., White, S. R., Kivelson, S. A.  
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- **Local interlayer tunneling between two-dimensional electron systems in the ballistic regime** *PHYSICAL REVIEW B*  
Luna, K., Kim, E., Oreto, P., Kivelson, S. A., Goldhaber-Gordon, D.  
2010; 82 (23)
- **Entropy-driven formation of a half-quantum vortex lattice** *PHYSICAL REVIEW B*  
Chung, S. B., Kivelson, S. A.  
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## PRESENTATIONS

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- After 33 years - is anything settled (about cuprate High Temperature Superconductivity - Harvard University)
- Quantum Mechanics at a Human Scale - A Public Lecture on Superconductivity - Boulder Summer School 2014 (July 9, 2017)
- Achieving Confusion - The Puzzle of Bad Metals - Kavli Institute for Theoretical Physics - UCSB (October 5, 2011)
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