

PUBLICATION LIST K. Levin

Areas Of Past Research:

Magnetism and Alloys
Superfluid helium – 3
Magnetic Superconductors
Heavy Fermion Metals

Coexistent BCS CDW Superconductors
Spin Glasses
Disorder And Localization

Current Interests:

1. High Tc Superconductors

2. BCS – BEC In Fermi Gases

3. Non – equilibrium Dynamics in Ultracold Superfluids

4. Conserving Theories Of Transport In Highly Correlated Super – conductors/fluids

5. Topological Superconductors, Superfluids

218. "Strong Pairing in two dimensions: Pseudogap and other phenomena" Xiaoyu Wang, Qijin Chen and K. Levin ArXiv 1907.10121 (2019)

217. "Full Proximity Treatment of Topological Superconductors in Josephson Junction architectures" F. Setiawan, Chien-Te Wu and K. Levin Phys. Rev. B 99, 174511 (2019).

216 Combined effects of pairing fluctuations and a pseudogap in the cuprate Hall effect, Rufus Boyack, Xiaoyu Wang, Qijin Chen and K. Levin Phys. Rev. B 99, 134504 (2019)

215. Density Waves and Jet Emission Asymmetry in Bose Fireworks, Han Fu, Lei Feng, Brandon Anderson, Logan Clark, Jiazhong Hu, Jeffery Andrade, Cheng Chin and K. Levin PRL 121, 243001 (2018). [See also New Scientist Dec 31, <https://www.newscientist.com/article/2188853-ultracold-atoms-can-make-strange-and-beautiful-quantum-fireworks/>].

214. Quantum Phase Transitions in Proximitized Josephson Junctions
Chien-Te Wu, F. Setiawan, Brandon Anderson, WeiHan Hsiao and K. Levin Phys. Rev. B

98,064504 (2018)

213. Observation of Density Dependent Gauge fields in a Bose-Einstein condensate, Logan Clark, Brandon Anderson, Lei Feng, K. Levin and Cheng Chin Phys. Rev. Lett. 121, 030402 (2018).

212. Cuprate Diamagnetism in the presence of a pseudogap: Beyond the standard fluctuation formalism, Rufus Boyack, Qijin Chen, A. A. Varlamov and K. Levin Phys. Rev. B 97, 064503 (2018)

211. Collective mode contributions to the Meissner effect: Fulde Ferrell and pair-density-wave superfluids.
Rufus Boyack, Chien-Te Wu, Brandon M. Anderson and K. Levin
Phys. Rev. B. 95, 214501 (2017)

210. Direct Lattice Shaking of Bose Condensates: Finite Momentum Superfluids
Brandon Anderson, Logan Clark, Jennifer Crawford, A. Glatz, I. Aranson, P. Scherpelz, Lei Feng, Cheng Chin and K. Levin
Phys. Rev. Lett. 118, 220401 (2017)

209. Majorana Zero Modes in Spintronics devices,
Chien-Te Wu, Brandon Anderson, Wei-Han Hsiao and K. Levin
Phys. Rev. B 95, 014519 (2016)

208. Two-dimensional spin-imbalanced Fermi gases at non-zero temperature:
Phase separation of a non-condensate
Chien-Te Wu, Brandon M. Anderson, Rufus Boyack, and K. Levin Phys. Rev. A 94, 033604 (2016)

207. Gauge invariant theories of linear response for strongly correlated superconductors
Rufus Boyack, Brandon M. Anderson, Chien-Te Wu and K. Levin Phys. Rev. B 94, 094508 (2016)

206. Correcting inconsistencies in the conventional superfluid path integral scheme
Brandon M Anderson, Rufus Boyack, Chien-Te Wu and K. Levin Phys. Rev. B 93, 180504(R) 2016

205. Quasi-condensation in two-dimensional Fermi gases, Chien-Te Wu, Brandon M. Anderson, Rufus Boyack and K. Levin
Phys. Rev. Lett 115, 240401 (2015).

204. Topological effects on transition temperatures and response functions in three-dimensional Fermi superfluids, Brandon Anderson, Chien-Te Wu, Rufus Boyack and K. Levin, Phys. Rev. B 92, 134523 (2015)

203. Signatures of Pairing and spin-orbit coupling in correlation functions of Fermi gases, Chien-Te Wu, Brandon M. Anderson, Rufus Boyack and K. Levin Phys. Rev. B 91, 220504(R) (2015).

202. Exact Correlation functions in the cuprate pseudogap phase: Combined effects of charge order and pairing, Rufus Boyack, Chien-Te Wu, Peter Scherpelz and K. Levin Phys Rev B 90, 220513(R) (2014).

201. Generic Equilibration dynamics of planar defects in trapped atomic superfluids, Peter Scherpelz, Karmela Padavic, Andy Murray, Andreas Glatz, Igor Aronson and K. Levin PRA 91, 033621 (2015). [ArXiv 1410.0067]

200. Shear Viscosity and (Im)Perfect Fluidity in Bosonic and Fermionic Superfluids Rufus Boyack, Hao Guo and K. Levin, Phys. Rev. B 90, 214501 ArXiv 1407.7572

199. Unified Treatment of Fermi pockets and arcs scenarios for the cuprates: Sum rule consistent response functions of the pseudogap Peter Scherpelz, Adam Rancon, Yan He and K. Levin PRB 90, 060506(R) (2014)

198. Equilibrating dynamics in quenched Bose gases: characterizing multiple time regimes A. Rancon and K. Levin PR A 90, 021602(R) (2014) (ArXiv 1403.0141)

197. Phase Imprinting in Equilibrating Fermi Gases: The Transience of Vortex Rings and Other Defects, Peter Scherpelz, Karmela Padavic, Adam Rancon, Andreas Glatz, Igor Aranson and K. Levin Phys. Rev. Lett. 113, 125301 (2014). (ArXiv 1401.8267)

196. Bosonic thermoelectric transport and breakdown of universality, A. Rancon, Cheng Chin and K. Levin New Journal of Physics 16, 113072 (2014)

195. Establishing Conservation Laws in Pair Correlated Many body theories: T matrix Approaches, Yan He and K. Levin,

194. Quantum Oscillations in non-Fermi liquids: Implications for high-temperature superconductors, P. Scherpelz, Yan He and K. Levin PRB 88, 220507(R) (2013)

193. Quench Dynamics in Bose condensates in the Presence of a Bath: Theory and Experiment, Adam Rancon, Chen-Lung Hung, Cheng Chin and K. Levin Phys. Rev. A 88, 031601R (2013)

192 The Compressibility in Strongly Correlated Superconductors and Superfluids: From BCS to BEC Hao Guo, Yan He, Chih-Chun Chien and K. Levin PRA 88, 043644 (2013).

191 Theory of Fluctuating Charge Ordering in the Pseudogap Phase of the Cuprates Via A Preformed Pair Approach, Yan He, Peter Scherpelz and K. Levin Phys. Rev. B 88, 064516 (2013)

190. Fundamental Constraints on Linear Response Theories of Fermi Superfluids Above and Below T_c , Hao Guo, Chih-Chun Chien, Yan He and K. Levin Int. J. Mod. Phys. B 27, 1330010 (2013).

189. "Comment on Density and Spin Response of a Strongly Interacting Fermi Gas in the Attractive and Quasi-Repulsive Regime" Chih-Chun Chien, Hao Guo and K. Levin Phys. Rev. Lett. 109, 118901 (2012).

188. "Pseudogap Effects in Fermi Gases in the Presence of A strong Effective Magnetic Field" Peter Scherpelz, Dan Wulin, K. Levin and A. K. Rajagopal Phys. Rev. A 87, 063602 (2013).

187. "Theory of Diamagnetism in the Pseudogap Phase: Implications from the Self energy of Angle Resolved Photoemission" Temperature Superconductors" Dan Wulin and K. Levin Phys. Rev. 86, 184513 (2012) (ArXiv 1209.1865)

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184. "The Fermi Gases and Superfluids: Experiment and Theory" Randall G. Hulet and K. Levin [Published as a Chapter in a book in the series "Contemporary Concepts of Condensed Matter Science", booktitle "Ultracold Bosonic and Fermionic Gases", Levin, Fetter and Stamper-Kurn- editors, Elsevevier, 2012]

183. Two Component Optical Conductivity in the Cuprates: A Necessary Consequence of Preformed Pairs. Dan Wulin, Hao Guo, Chih-Chun Chien, and K. Levin PRB 86, 134518 (2012) [ArXiv 1108.4375]

182 Nucleation of Spontaneous Vortices in Trapped Fermi Gases Undergoing a BCS-BEC Crossover A. Glatz, H. Roberts, I.S. Aronson, K. Levin Phys. Rev. B Rapid 84, 180501 (2011).

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177. Establishing the Presence of Coherence in Atomic Fermi Superfluids: Spin Flip and Spin-Preserving Bragg Scattering at Finite Temperatures, Hao Guo, Chih-Chun Chien and K. Levin

176. Fermi liquid theory of ultra-cold trapped Fermi gases: Extracting the Landau Parameters, Chih-Chun Chien and K. Levin Phys. Rev. A 82, 013603 (2010).

175. Comparison of Gap Extraction Methods Based on STM and ARPES Experiments in the Cuprates Dan Wulin, Chih-Chun Chien, Dirk Morr and K. Levin (preprint)

174. "Contrasting Nodal and Anti-Nodal Behavior in the Cuprates Via Multiple Gap Spectroscopies, Dan Wulin, Chih-Chun Chien, Dirk Morr and K. Levin Phys. Rev. B 81, 100504(R) (2010).

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164 "Phenomenological theory of the protected nodes and collapse of the Fermi arcs in underdoped cuprate superconductors." Qijin Chen and K. Levin Phys. Rev. B 78, 0200513(Rapid Communications) (2008).

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162. "Thermodynamics and Superfluid Density in BCS-BEC Crossover with and without Population Imbalance" Yan He, Chih-Chun Chien, Qijin Chen and K. Levin Phys. Rev. B 76, 224516 (2007)

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157. "What Can Ultracold Fermi Gases Teach Us About High T_c Superconductors and Vice Versa?" K. Levin and Qijin Chen cond-mat/0611104 (Invited Talk-- M2S Conference)

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