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
6. Superconductivity in Magic Angle Graphene

222. "Dynamic preparation of an atomic condensate in a Hofstadter band", Han Fu, Andreas Glatz, Fnu Setiawan, Kai-Xuan Yao, Zhandong Zhang, Cheng Chin and K. Levin (2021, preprint)

221. "Unified approach to electrical and thermal transport in high-Tc superconductors", Rufus Boyack, Zhiqiang Wang, Qijin Chen and K. Levin ArXiv 2104.04879 (2021)


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)


208. Two-dimensional spin-imbalanced Fermi gases at non-zero temperature: Phase separation of a non-condensate

207. Gauge invariant theories of linear response for strongly correlated superconductors

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


200. Shear Viscosity and (Im)Perfect Fluidity in Bosonic and Fermionic Superfluids

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)


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


184. "The Fermi Gases and Superfluids: Experiment and Theory" Randall G. Hulet and


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


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)


160. "First and Second Sound Modes at Finite Temperature in Trapped Fermi Gases: From BCS to BEC" Yan He, Qijin Chen, Chih-Chun Chien and K. Levin Phys. Rev. A 76, 051602 (2007) (Rapid Communications)


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

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148. "Ground state description of a single vortex in an atomic Fermi gas: From BCS to
Bose-Einstein condensation", Chih-Chun Chien, Yan He, Qijin Chen and K. Levin, Phys. Rev. A 73, 041603(R), 2006


111. "Some aspects of the theory of magnets with competing double exchange and


72. "Metallic Copper Oxides as an Almost Localized Fermi Liquid," Invited Talk,


49. "Theory of Antiferromagnetic Superconductors" (Invited Talk), Sixth International Taniguchi Symposium #52. Springer Verlag.


45. "Collective Modes in Charge-Density-Wave Superconductors," D. A. Browne and


42. "Phenomenological Theories of Liquid 3He," K. Levin and O. T. Valls, Physics Reports, #1, 98 (August, 1983).


16. "Theory of the Field-Dependent Phase Diagram of Superfluid He3 Below the


