

Frontiers in Quantum Matter: Symmetry, Topology & Strong Correlation Physics

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I highlight some current and frontier directions in low-temperature physics and quantum matter, focussing on unsolved problems and open questions: (i) is superfluid $^3\text{He-A}$ the precursor to magnetically ordered solid ^3He ?, (ii) Majorana particles in superfluid ^3He - where are they and should we care?, (iii) what do we *not* understand about the dynamics of mesoscopic objects in a quantum bath at ultra-low temperatures?, and (iv) does our understanding of quantum fluids and quantum turbulence provide any insight into the rotational dynamics of pulsars?

Section: SC - Strongly correlated quantum matters

Keywords: Phase Transitions, Majorana Fermions, Chiral Superfluids, Stochastic Dynamics, Solid ^3He , Superfluid ^3He , Superfluid Neutron Star Matter

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