Premala Chandra

Rutgers University, USA

Quantum Annealed Criticality

Experimentally there exist many materials with first-order phase transitions at finite temperature that display quantum criticality. Classically, a strain-energy density coupling is known to drive first-order transitions in compressible systems, and here the Larkin-Pikin mechanism is generalized to the quantum case. I will show that if the $T=0$ system lies above its upper critical dimension, the line of first-order transitions can end in a "quantum annealed critical point" where zero-point fluctuations restore the underlying criticality of the order parameter. Experimental consequences of this result will be discussed.

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