



PHYSICS AND ASTRONOMY COLLOQUIUM

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"Towards designing and probing ultra-quantum matter"

Abstract

Ultra-quantum matter is the proposed umbrella term to describe states of matter made of quantum particles with long range quantum entanglement among them. These states of matter lie outside the standard Landau classification of phases of matter by broken symmetries, where solid is distinct from liquid because its crystalline lattice breaks translational invariance. Typically, ultra-quantum matter does not break any symmetries despite forming distinct phases of matter. Examples of ultra-quantum matter include topological states such as in the quantum Hall effect or in certain quantum spin liquids, and "strange metals" in cuprates. In the last decade, cold atoms have become a promising framework to "engineer" quantum matter. I will describe ongoing efforts to model and design ultra-quantum matter in the lab using cold atoms, and devise methods to probe its ultra-quantum correlations.

Wednesday, November 8, 2017

2:30 p.m.

Elliott Building

Room 167