Title: Why condensed matter physicists are paying attention to atomic physics

Abstract: Ultra-cold, quantum degenerate atomic gases have become an important platform for the quantum simulation of problems important for condensed matter (CM) physics.  Neutral atoms in optical lattices exhibit surprising behavior even in non-interacting systems, and can effectively simulate the simple but calculationally challenging many-body Hubbard Model of CM.  Other optical techniques allow the introduction of synthetic fields that make the neutral atoms behave as if they were charged particles in a magnetic field, an important system for physics and technology.  This talk will discuss the production, nature, and use of quantum degenerate gases and the prospects for new understanding of old problems.