The 892nd IMS colloquium

Building with Crystals of Light and Quantum Matter : From clocks to computers

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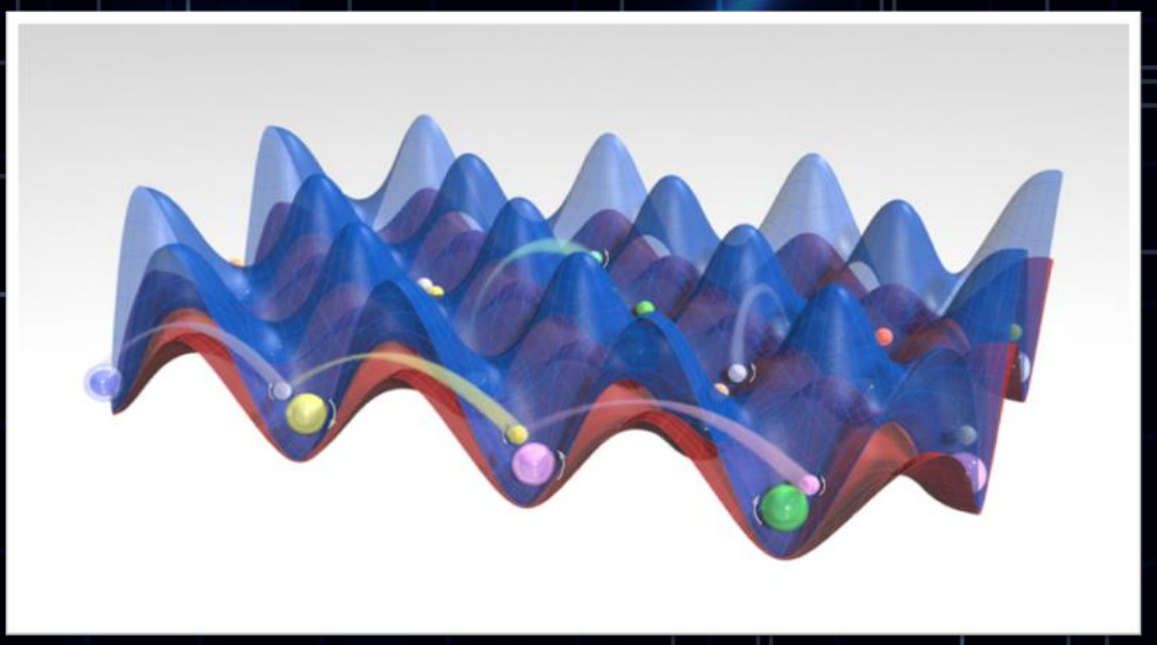
Date & Time: 2016/10/11 (Tue.) 16:00-
Place: IMS Research Building Room 201

Understanding the behavior of interacting electrons in solids or liquids is at the heart of modern quantum science and necessary for technological advances. However, the complexity of their interactions generally prevents us from coming up with an exact mathematical description of their behavior. Precisely engineered ultracold gases are emerging as a powerful tool for unraveling these challenging physical problems. In this talk, I will present recent developments at JILA on using alkaline-earth atoms (AEAs) -- currently the basis of the most precise atomic clock in the world-- for the investigation of complex many-body phenomena and magnetism. I will discuss ideas to use AEAs dressed by laser fields to engineer analogs of spin-orbit coupled Hamiltonians, Weyl quasiparticles, as well as new forms of matter with no yet known counterpart in nature.



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Ryota Iino & Takeshi Yanai (IMS colloquium FY2016 committee)