UCLA Department of Physics & Astronomy

COLLOQUIUM

Thursday, April 8, 2021 at 4 p.m.

High-precision physics and chemistry with ultracold molecules

Tanya Zelevinsky
Columbia University

Techniques for controlling the internal quantum states and motion of atoms have led to extremely precise clocks and state-of-the-art studies of degenerate gases. Extending such techniques to various types of molecules further enriches the understanding of fundamental physics, basic chemical processes, and many-body science. Samples of ultracold diatomic molecules can be created by binding laser-cooled atoms, or by direct molecular laser cooling. We explore both approaches and demonstrate a high-precision optical-lattice based molecular clock, as well as chemical processes in the quantum domain that manifest very differently than at room temperature.