

New opportunities for quantum science: ultracold triplet molecules, and highly magnetic atoms

Monday, 11 September 2023 11:15 (35 minutes)

Ultracold atoms and molecules continue to provide new opportunities for basic quantum science, for precision measurement, and for the study of paradigmatic Hamiltonians. I will illustrate two novel systems: Using ultracold NaLi atoms in the triplet ground state, we were able to control chemistry via magnetic fields and quantum interference. Using a new optical superresolution technique, we could localize dysprosium atoms with a separation much smaller than the diffraction limit of light, down to 50 nm, and observe strong purely magnetic interactions between atoms which are usually much weaker than electric interactions.

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Session Classification: Ultracold Molecules

Track Classification: Other