



# Department of Physics Colloquium

December 5, 2022



3:00 PM

## Universal few-body physics of a few nucleons or a few ultracold atoms

Prof. Chris Greene  
*Purdue University*

Recent developments in the field of a few interacting particles with nonperturbative interactions will be reviewed, focusing on ultracold atomic physics, and on a recent application to the few-nucleon problem. Some of these studies are intimately connected with the Efimov effect, while others go beyond the standard Efimov effect with its remarkable infinity of long-range energy levels. Some of our relevant references addressing those topics are listed below.

- [1] *Nonresonant Density of States Enhancement at Low Energies for Three or Four Neutrons*, Phys. Rev. Lett. **125**, 052501 (2020), with Michael Higgins, Alejandro Kievsky, and Michele Viviani
- [2] *Efimov physics implications at p-wave fermionic unitarity*, Phys. Rev. A **105**, 013308 (2022), with Yu-Hsin Chen
- [3] *Nonadiabatic Molecular Association in Thermal Gases Driven by Radio-Frequency Pulses*, Phys. Rev. Lett. **123**, 043204 (2019), with Panos Giannakeas, Lev Khaykovich, and Jan-Michael Rost
- [4] *Ultracold Heteronuclear Three-Body Systems: How Diabaticity Limits the Universality of Recombination into Shallow Dimers*, Phys. Rev. Lett. **120**, 023401 (2018), with Panos Giannakeas

This colloquium will be held in-person, at SERC 116 unless announced otherwise.