

PHYSICS COLLOQUIUM

Wednesday, March 7

2:00 pm in RNS 210

Using Classical Mechanics to Study Quantum Mechanical Systems

Understanding details of electron capture from atoms and molecules by highly charged ions at low collision energies ($< 3\text{keV/amu}$) is important to scientist trying to model interactions of ions with cold gases such as solar wind ions colliding with planetary, cometary and interstellar gases, or impurities in magnetically confined fusion machines interacting with gas injected into the machine. The emission spectra resulting from the electron capture process is very sensitive to initial n, l states populated by the captured electrons. This talk will focus on our attempts to calculate state specific cross sections for single electron capture for highly charged ions ($q > 5$) and neutral molecules such as H_2O and CO_2 .



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James did a short post-doc at Lawrence Livermore National Laboratory after obtaining his Ph.D. Since the Fall of 2000 he has worked as a professor at Luther College where he is currently the department head.