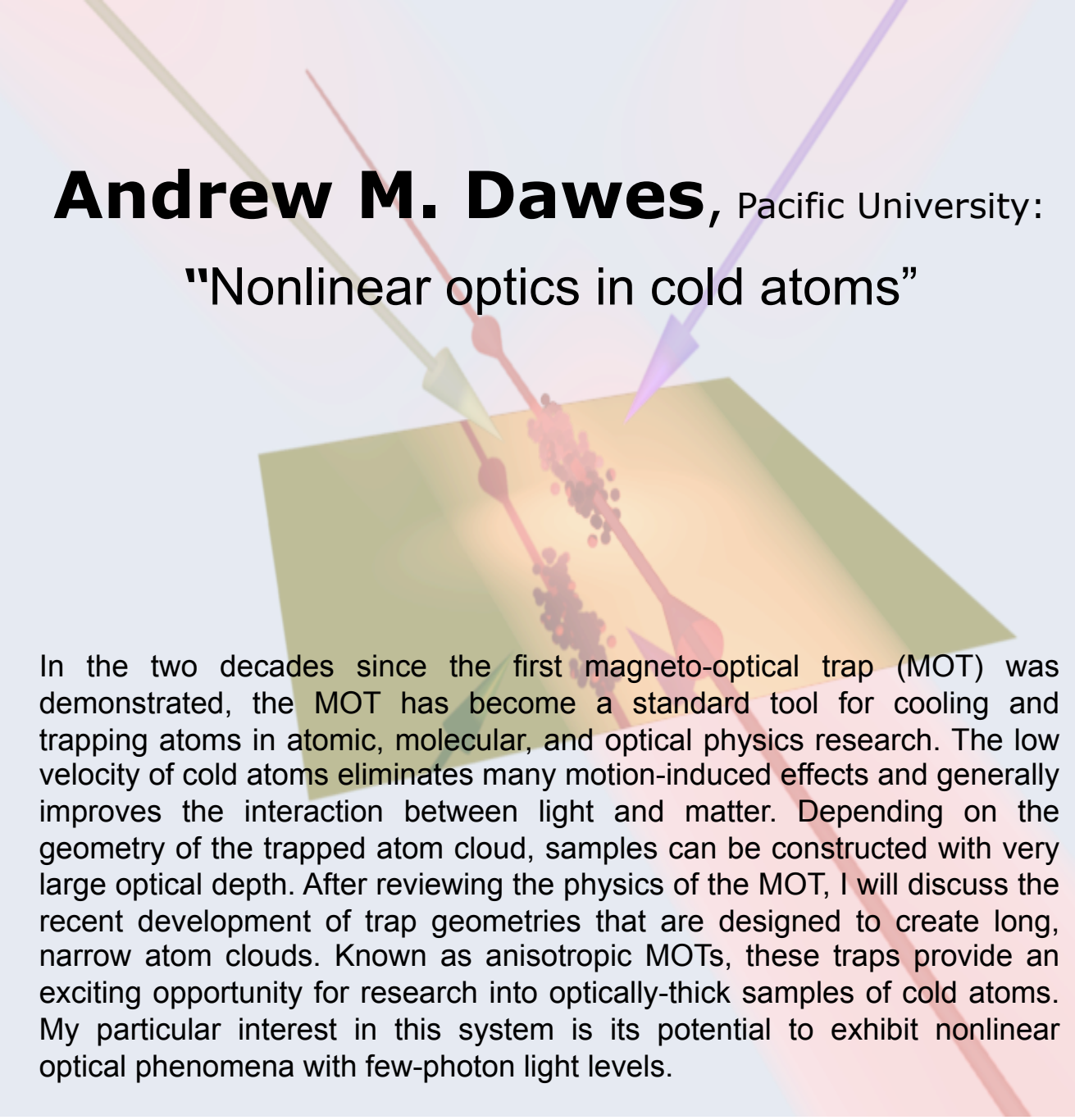
Physics Seminar

Friday, April 9th, 2010
Collins 323, 3:00 pm



Andrew M. Dawes, Pacific University:

"Nonlinear optics in cold atoms"

In the two decades since the first magneto-optical trap (MOT) was demonstrated, the MOT has become a standard tool for cooling and trapping atoms in atomic, molecular, and optical physics research. The low velocity of cold atoms eliminates many motion-induced effects and generally improves the interaction between light and matter. Depending on the geometry of the trapped atom cloud, samples can be constructed with very large optical depth. After reviewing the physics of the MOT, I will discuss the recent development of trap geometries that are designed to create long, narrow atom clouds. Known as anisotropic MOTs, these traps provide an exciting opportunity for research into optically-thick samples of cold atoms. My particular interest in this system is its potential to exhibit nonlinear optical phenomena with few-photon light levels.