

Abstract Submitted
for the DAMOP14 Meeting of
The American Physical Society

Experimental modelling of material interfaces with ultracold atoms¹ THEODORE A. CORCOVILOS, ROBERT W.A. BROOKE, JULIE GILLIS, ANTHONY C. RUGGIERO, GAGE D. TIBER, CHRISTOPHER A. ZACCAGNINI, Department of Physics, Duquesne University, Pittsburgh, PA 15282 — We present a design for a new experimental apparatus for studying the physics of junctions using ultracold potassium atoms (K-39 and K-40). Junctions will be modeled using holographically projected 2D optical potentials. These potentials can be engineered to contain arbitrary features such as junctions between dissimilar lattices or the intentional insertion of defects. Long-term investigation goals include edge states, scattering at defects, and quantum depletion at junctions. In this poster we show our overall apparatus design and our progress in building experimental subsystems including the vacuum system, extended cavity diode lasers, digital temperature and current control circuits for the lasers, and the saturated absorption spectroscopy system.

¹Funding provided by the Bayer School of Natural and Environmental

Theodore A. Corcovilos
Duquesne University

Date submitted: 31 Jan 2014

Electronic form version 1.4