Abstract Submitted
for the NWS15 Meeting of
The American Physical Society

Engineering dispersion relations: Floquet-Bloch States in a Bose-Einstein Condensate[1] MAREN MOSSMAN, M.A. KHAMEHCHI, PETER ENGELS, Washington State University — Bose-Einstein Condensates (BECs) provide a flexible platform to model a wide variety of condensed matter phenomena. To this goal, periodically driven optical lattices are a premier tool to create interesting band structures. By applying both static and moving lattices to a BEC, we investigate Floquet-Bloch states formed in these systems. In our scheme, the s band and the p_x band of a static lattice are coupled through a moving lattice, forming a hybrid s-p_x band. The dispersion minimum is shifted away from zero quasimomentum, leading to an artificial gauge field for the atoms. We report our findings as well as future directions of these experiments.

[1]This work is supported by NSF

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Date submitted: 08 Apr 2015 Electronic form version 1.4