1023-35-46 **Mason A Porter*** (`mason@caltech.edu`), MC 114-36, California Institute of Technology, Sloan Annex 130, Pasadena, CA 91125-3600. *Localized and Spatially Extended Waves in Bose-Einstein Condensates in Periodic Potentials.*

Bose-Einstein condensates (BECs), formed at extremely low temperatures when particles in a dilute gas of bosons condense into the ground state, have generated considerable excitement in the atomic physics community, as they provide a novel, experimentally-controllable regime of fundamental physics. Their mean-field dynamics, described by a nonlinear Schrödinger equation known as the Gross-Pitaevskii equation, has also received increased attention from mathematicial scientists during the past few years. In this talk, I will describe my ongoing work on BEC coherent structures in periodic potentials. I will discuss several classes of spatially extended and localized waves. (Received July 14, 2006)