

Abstract Submitted  
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**Band Effects in Optical Lattices Containing Cold Atoms** VITO SCAROLA, SANKAR DAS SARMA, University of Maryland — The possibility of manipulating band structure to engineer novel, many-body ground states of cold bosons in optical lattices is discussed. Effective Hamiltonians are derived using the realistic band structure of one and two dimensional systems. We analyze the mean field phase diagram and stability of these models in experimentally relevant parameter regimes.

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