Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Scaling of noise correlations of hard-core bosons in incommensurate lattices KAI HE, Georgetown University, INDUBALA I. SATIJA, George Mason Univerisity; Joint Quantum Institute, NIST, CHARLES W. CLARK, Joint Quantum Institute, NIST, ANA MARIA REY, JILA, NIST, MARCOS RIGOL, Georgetown University — We study the scaling of the momentum distribution function and the noise correlations in the Mott insulator, Bose glass, and superfluid quantum phases of hard-core bosons subjected to quasi-periodic disorder. The exponents of the correlation functions at the superfluid to Bose-glass transition are found to be approximately one half of the ones that characterize the superfluid phase. We also find a divergence in the derivative of the noise correlation peaks with respect to the strength of disorder at the superfluid to Bose-glass critical point. This behavior is found not to occur in the corresponding free fermion system, where an Anderson-like transition takes place at the same critical point.

Kai He
Georgetown University

Date submitted: 10 Nov 2011 Electronic form version 1.4