

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Phase transitions and emergent gauge potentials in strongly interacting spin-orbit coupled bosons¹ WILLIAM COLE, KHAN MAHMUD, JAY SAU, Condensed Matter Theory Center and Joint Quantum Institute, University of Maryland, IAN SPIELMAN, Joint Quantum Institute, University of Maryland and National Institute of Standards and Technology — We use DMRG to map out the phase diagram of two-component spin-orbit coupled bosons in one spatial dimension with strong interactions. We locate phase transitions varying the Rabi coupling and wavevector of the spin-orbit coupling as well as the interaction strength. We then focus our attention near the hard-core limit, where we argue for a mapping to an effective model where density fluctuations see the spin texture as a gauge field. We discuss the experimental feasibility of observing these phase transitions through direct imaging of spin domains.

¹This work is supported by JQI-NSF-PFC and the Alfred P. Sloan Foundation.

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Date submitted: 11 Nov 2016

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