**Signatures of Quantized Vortex States in Rotating Optical Lattices** BRANDON PEDEN, RAJIV BHAT, MERET KRÄMER, MURRAY HOLLAND, JILA and Department of Physics, CU Boulder — Recent theoretical studies of ultracold gases in two-dimensional rotating optical lattices have taken advantage of the notion of quasi-angular momentum, a quantum number that characterizes the eigenstates of a system with a discrete rotational symmetry. In a gas of strongly interacting bosons, transitions between states of differing quasi-angular momentum have been predicted, implying the entrance of vortices to the lattice. We identify signatures in the linear momentum distribution that distinguish between the different quasi-angular momentum states.

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