

Abstract Submitted
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Probing Ultracold Atoms in Optical Lattices with Bragg Scattering¹ HIROKAZU MIYAKE, GEORGIOS SIVILOGLOU, GRACIANA PUENTES, NIKLAS JEPSEN, IVANA DIMITROVA, DAVID WELD, DAVID PRITCHARD, WOLFGANG KETTERLE, MIT — A major thrust of the field of ultracold atoms in optical lattices has been to create novel phases of matter. Developing techniques to probe these systems is as important as the realization of such phases. We have applied the technique of Bragg scattering to study quantum degenerate bosonic ^{87}Rb atoms from the superfluid phase to the Mott insulator phase in a 3D optical lattice. Bragg scattering can allow the direct detection of new phases such as antiferromagnetic ordering in 3D, both in the spin and occupation number sector.

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