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**Evidence for Metallic Behavior in the Bose-Hubbard Model** DAVID MCKAY, MATT WHITE, MATT PASIENSKI, BRIAN DEMARCO, University of Illinois at Urbana-Champaign — We report measurements on transport of a <sup>87</sup>Rb Bose-Einstein Condensate loaded into a 3D optical lattice well-characterized by the Bose-Hubbard model. We have measured temperature-dependent dissipation of center-of-mass oscillations in the low-velocity limit. The observed damping rate levels out as the system is cooled, which is the signature of a metallic phase. This behavior is consistent with the cross-over between quantum tunneling and thermal activation of phase slips. We find excellent agreement with this model and our measurements of the damping rate as a function of the Bose-Hubbard parameters. We have also observed vortices nucleated by center-of-mass motion, providing further evidence for quantum phase slips.

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