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Reservoir-assisted band decay of ultracold atoms in a spin-dependent optical lattice[1] DAVID CHEN, DAVID MCKAY, CAROLYN MELDGIN, BRIAN DEMARCO, University of Illinois at Urbana Champaign — We report measurements of reservoir-assisted decay of atoms in excited bands in a cubic, spin-dependent optical lattice. We adiabatically load a 87Rb BEC in a mixture of mF=0 and mF=-1 states into a 3D lattice. Atoms in the mF=-1 state experience a strong lattice potential. On the contrary, atoms in the mF=0 state form a harmonically trapped superfluid reservoir since they do not interact with the lattice. We transfer atoms in the mF=-1 state to the first excited band using stimulated Raman transitions, and we measure the decay rate to the ground band induced by collisions with the reservoir.

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