

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

The Molecular Hubbard Hamiltonian¹ LINCOLN D. CARR,
MICHAEL L. WALL, Colorado School of Mines — We present the Molecular Hubbard Hamiltonian [1], which describes ultracold heteronuclear diatomic molecules in an optical lattice in a strong DC electric field. Using time-evolving block decimation, we describe the quantum dephasing and entangled many body dynamics of the molecules due to an additional AC electric field driving rotational state transitions. We also discuss the effect of nuclear hyperfine structure and strong magnetic fields. [1] M. L. Wall and L. D. Carr, “Emergent Time Scales in Entangled Quantum Dynamics of Ultracold Molecules in Optical Lattices,” *New Journal of Physics* **11**, 055027 (2009).

¹Supported by the National Science Foundation

Lincoln D. Carr
Colorado School of Mines

Date submitted: 18 Nov 2009

Electronic form version 1.4