

Abstract Submitted  
for the DAMOP17 Meeting of  
The American Physical Society

**Quantum walks assisted by particle number fluctuations.** RODRIGO A VARGAS-HERNANDEZ, ROMAN V KREMS, Univ of British Columbia — We consider quantum walks of particles governed by lattice Hamiltonians with particle-number changing interactions. We show that such interactions, even if weak, accelerate quantum walks at short times due to Rabi oscillations between different particle number subspaces. We examine the dynamics of quantum walks governed by Hamiltonians arising in the context of D-wave quantum annealing experiments and experiments with excitations of ultracold molecules in optical lattices. The same Hamiltonians describe excitations in ensembles of highly magnetic atoms, such as Dy.

R A Vargas-Hernandez and R V Krems, *J. Phys. B: At. Mol. Opt. Phys.* 49, 23550 (2016).

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Date submitted: 27 Jan 2017

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