

Abstract Submitted  
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**Variance minimization variational Monte Carlo method**<sup>1</sup> BO GAO, IMRAN KHAN, University of Toledo — We present a variational Monte Carlo (VMC) method that works equally well for the ground and the excited states of a quantum system. The method is based on the minimization of the variance of energy, as opposed to the energy itself in standard methods. As a test, it is applied to the investigation of the universal spectrum at the van der Waals length scale for two identical Bose atoms in a symmetric harmonic trap, with results compared to the basically exact results obtained from a multiscale quantum-defect theory<sup>2</sup>. Results for trapped few-atom systems<sup>3</sup> will also be presented.

<sup>1</sup>Supported by NSF

<sup>2</sup>Y. Chen and B. Gao, cond-mat/0701384.

<sup>3</sup>I. Khan and B. Gao, Phys. Rev. A **73**, 063619 (2006).

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