

Abstract Submitted  
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**Variational Matrix Product Ansatz for Interacting 1D Gases<sup>1</sup>**

SANGWOO CHUNG, KUEI SUN, C.J. BOLECH, University of Cincinnati — Shortly after the advent of the density matrix renormalization group (DMRG) method, Ostlund and Rommer [PRL 75, 3537-3540 (1995)] have demonstrated that ground states of one-dimensional lattice systems obtained with the DMRG procedure can be written in terms of products of matrices and, remarkably, that those ground states can be obtained from variational methods without making any reference to DMRG. Since then, a lot of activity ensued and recently there was some additional success in going beyond lattice models and obtaining the ground state properties of interacting bosons in the continuum. We extend those findings and discuss systems of both interacting Bosons and Fermions in one-dimension.

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