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Stochastic Variational Method for Atomic Gases MARTIN THØGERSEN, DMITRI FEDOROV, AKSEL JENSEN, Department of Physics and Astronomy, University of Aarhus, Denmark — We have applied the stochastic variational method [1] to trapped cold gases and calculated energies, densities, correlation functions and condensate fractions as function of scattering length and particle number [2]. We also investigated the N-body Efimov effect for systems with $N = 3, 4, 5, 6$, and 7 bosons at infinite scattering length and obtained the characteristic exponential scaling factors for the energies and densities [3]. We have also compared the finite-range three-body model with the zero-range model [4] and determined the validity region of, and the effective range corrections to, the latter.
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