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Trapped few-particle systems with finite angular momentum: Results obtained using the stochastic variational approch[1] D. RAKSHIT, D. BLUME, Washington State University — Trapped few-boson and few-fermion systems are ideally suited to study few-body phenomena. A particularly exciting topic along these lines is the three-body Efimov effect and its implication and generalization to larger systems. We present a theoretical approach that allows for the characterization of small ultracold systems with up to five or six particles. The ground states of the three- and four-boson systems under external spherically-symmetric harmonic confinement have vanishing orbital angular momentum. The ground states of two-component Fermi systems with population difference, in contrast, have finite angular momentum L. For example, the ground states of the non-interacting (2,1) and (3,1) systems carry one unit of angular momentum and have natural and unnatural parity, respectively. We apply the stochastic variational approach to two-component Fermi gases with finite angular momentum. We discuss our implementation and present results for the energies as a function of the system parameters such as the s-wave scattering length and the mass ratio between the two species.

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