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**Equation of State of One-Dimensional Fermions in Harmonic Traps** CASEY BERGER, The Ohio State University, ERIC ANDERSON, JOAQUIN DRUT, The University of North Carolina at Chapel Hill — We test a novel numerical method for computing the ground state energy of fermions in a harmonic trapping potential. The new technique combines hybrid Monte Carlo and a Gauss-Hermite discretization instead of a uniform lattice. Use of the harmonic oscillator basis and Gauss-Hermite points avoids the problem of edge effects and spurious copies that arise from periodic boundary conditions. This study sets the stage for calculations in higher dimensions, relying on non-uniform Fast Fourier Transform algorithms for acceleration. Based on this method we determine the ground-state energy of unpolarized few-body systems constrained to one-dimensional motion.

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