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Lattice Study of Trapped Fermions at Unitarity

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I describe a lattice study of up to $N=20$ unitary fermions confined to a harmonic trap. Our results show excellent agreement (within 1%) with high precision solutions to the many-body Schrodinger equation for up to $N=8$. We are also able to make predictions for larger N which were inaccessible by the Hamiltonian approach due to computational limitations. Harmonic traps are used experimentally to study cold atoms tuned to a Feshbach resonance. We show that they also provide certain benefits to numerical studies of many-body correlators on the lattice. In particular, we anticipate that the methods described here could be used for studying nuclear physics.

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talk

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