

Antiferromagnetic spin chain of few cold atoms in a one-dimensional trap

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Cold atoms with strong contact interactions in a quasi-one-dimensional trap form a spin chain with Heisenberg exchange coupling. An optical lattice is not necessary for the formation of this strongly correlated quantum state and hence it should be much easier to prepare it. Indeed, these systems have recently been realized in Selim Jochim's group in Heidelberg. We apply the spin-chain model to these experiments and find good agreement.