1135-81-2232 **Marius Lemm*** (mlemm@math.ias.edu). *Local gap threshold for frustration-free Hamiltonians with open boundary conditions.*

A fundamental question about a quantum many-body system is whether it is "gapped". (We say a system is "gapped" if the distance between the two lowest eigenvalues of the Hamiltonian remains bounded in the thermodynamic limit.)

The question whether a system is gapped is difficult to answerin general (in fact, it is undecidable), and we restrict to the more approachable class of "frustration-free" Hamiltonians. In 1988, Knabe devised a "finite-size criterion" for periodic frustration-free spin chains, which says that if the gap at a fixed system size exceeds a certain threshold, then the gap does not close in the thermodynamic limit. We extend Knabe's finite-size criterion to open boundary conditions and we explore some applications. (Received September 25, 2017)