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Title: Quantum excitations in 1d: real and simulated

Abstract: I will discuss two aspects of the one dimensional quantum Ising chain, which is the paradigmatic example of the formation of fractional solitons or domain walls. First, I will describe theory and experiment in which frustrated kinetic energy leads to flat bands of solitons, which thereby become strongly susceptible to interactions, forming several bound states. Then I will explain a theoretical attempt to design protocols to create quasiparticle excitations on a quantum device, again taking using the Ising chain as an illustration.