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# Non-equilibrium dynamics in a periodically driven transverse field Ising chain

In this talk, I will discuss the nonequilibrium dynamics in a quantum Ising chain where the transverse field slowly rotates. The corresponding magnetization oscillations are found to be non-thermalized and can be explained by contributions from different particle excitations in the quantum E_8 integrable model. For the details of the talk, firstly, I will provide a brief introduction to the quantum E_8 integrable model. Then, I will delve into the detailed composition of the time-dependent magnetizations based on quantum E_8 physics. Specifically, in the frequency domain, the magnetization spectrum reveals a series of singular peaks for the z (Ising) component. These singular peaks split into two sets for the magnetization along the x and y directions, with frequency shifts determined by the rotational-field frequency. Finally, I will propose a Rydberg qubit array for potential experimental investigation.

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