



Theory of the magnon parametron

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The “magnon parametron” is an Ising spin that forms as a result of parametric excitation of a ferromagnetic particle by microwaves beyond a certain threshold. We model the dynamics of the magnon parametron as a function of microwave power, applied magnetic field and temperature for the interacting magnon system, taking into account thermal and quantum fluctuations. We predict three dynamical phases, viz. a stable Ising spin, telegraph noise of thermally activated switching, and an intermediate regime that at lower temperatures is quantum correlated with significant distillable magnon entanglement. These three regimes of operation are attractive for alternative computing schemes [arXiv:2109.09117, PRB 105, 054403 (2022)].

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Room 55, Boltzmannngasse 5, 1st floor, 1090 Wien

Zoom link:

<https://univienne.zoom.us/j/63549562931?pwd=NWxYdFlYTDh4VjhQODRhOWFwOVpMZZ09>