

Order parameter recovery dynamics in pump and probe experiments

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Content

One of the central challenges of ultrafast experiments is understanding order parameter recovery dynamics following a quench induced by the pump pulse. I will present theoretical analysis of this problem using large-N effective model of overdamped dynamics. Interesting features of this model include strong dependence of the recovery time on the strength of the pump pulse and different relaxation timescales for excitations at different lengthscales. Similar features have been observed in systems with different types of order, including CDW order in LaTe₃ and AF order in Sr₂Ir₂O₄. I discuss other predictions of the model that can be tested experimentally, including over-population of low momentum modes and emergent universal scaling form of transient correlation functions.

Summary

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