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**Symmetry Breaking and Phase Transition in a Driven-Dissipative Kerr Oscillator** XIN ZHANG, HAROLD U. BARANGER, Duke University — We show that quantum many-body effects can appear in a single non-linear oscillator that is driven by an external field in the presence of dissipation. This simple system is a paradigmatic example of open quantum many-body systems in which there has been great interest recently due to recent experimental advances such as quantum simulation. Here, weak non-linearity plays the role of the thermodynamic limit. Using both analytical and numerical methods, we demonstrate Z2 symmetry breaking and the corresponding phase transition.

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