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【408】 Emergent atomic pump driven by dissipation in an optical cavity

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The time evolution of a quantum system can be strongly affected by dissipation. In our experiment, we study a Bose-Einstein Condensate coupled to a high finesse resonator. The cavity mode is populated via the atoms, such that the sum of the coupling beam(s) and the intracavity standing wave gives an optical lattice potential. When the dissipative and the coherent timescales are comparable, we find a regime of persistent oscillations where the cavity field does not reach a steady state. Eventually, the dynamical lattice triggers a pumping mechanism. We will show complementary measurements of the light field and of the atomic transport, proving the connection between the non-stationarity and the pump.

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