

Abstract Submitted
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Chaotic dynamics of dipolar condensates in optical traps¹ ROX-ANNE MORAN, BOAZ ILAN, KEVIN MITCHELL, University of California, Merced — The potential energy of two-dimensional optical traps typically induces chaotic dynamics in the resulting classical trajectories. This has a profound impact on the transport and escape properties of ultracold atoms in such traps. Prior theory showed that attractive atomic contact interactions would enhance the relative importance of classical fractal structures in the quantum chaotic scattering, by reducing quantum dispersion. With recent experimental advances in creating degenerate dipolar gases, we seek to understand the relevance of long-range dipole-dipole interactions on the chaotic scattering and transport rates of gases in optical potentials. Given the theoretical predictions of two-dimensional solitons in such gases, we expect a correspondingly large enhancement in the role of classical fractal structures.

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