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Collisions of matter waves with ultracold atoms in a ring trap

MANUEL VALIENTE, NICOLAI NYGAARD, KLAUS MOLMER, Department of Physics & Astronomy, Aarhus University — Ultracold atoms confined in ring-shaped potentials constitute a neat experimental realization of finite-size one-dimensional many-body systems. Usually, these potentials are modeled by traps, which do not support a continuum of states. We consider here fermionic or bosonic atoms trapped in thin ring potentials supporting a finite number of bound states, and scattering states, and probe their behavior via collisions of matter waves.

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