

Abstract Submitted
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Few-boson processes in the presence of an attractive impurity under one-dimensional confinement NIRAV MEHTA, CONNOR MOREHEAD, Trinity University — We consider the universal few-body physics of a single light impurity atom (L) interacting with a few heavier atoms (H) under strict one-dimensional confinement with zero-range interactions. Due to the mass imbalance, the system is non-integrable. All universal properties are specified by the mass ratio $\beta = m_L/m_H$ and the coupling ratio $\lambda = g_{HH}/g_{HL}$, enabling the calculation of few-body “phase diagrams” on the λ - β plane. Because the three-body and four-body eigenenergies determine the energy thresholds for inelastic scattering processes involving HL , HHL and $HHHL$ collision partners, we are able to partition the λ - β phase space into regions according to whether or not particular inelastic processes are energetically allowed.

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