

Abstract Submitted
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Effective interactions of ultracold bosons in anisotropic and anharmonic potentials PHILIP JOHNSON, American University, EITE TIESINGA, JQI, NIST Gaithersburg and University of Maryland, XIANGYU YIN, DOERTE BLUME, Washington State University — We have recently calculated effective 2-, 3-, and 4-body interactions for N neutral ultracold bosons in an isotropic (spherical) harmonic trap. But for the important case of optical lattice potentials these results provide only a rough estimate of the effective multibody interactions in the small scattering length regime. In this talk I will extend our model and results to anisotropic and anharmonic potentials. For example, we find anharmonic corrections as large as 30-40% for the effective three-body interaction strength in typical optical lattice potentials. I also discuss non-perturbative behaviors of the multibody interactions.

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