Ultracold three-body recombination and Efimov physics under partial confinement JOSE P. D'INCAO, JILA and Department of Physics, University of Colorado, YUJUN WANG, BRETT ESRY, Department of Physics, Kansas State University — We present a study of the ultracold three-body problem in the presence of harmonic confinement along one direction, resulting in a quasi-two-dimensional geometry. We solve the problem essentially exactly using a formalism based on democratic hyperspherical coordinates and incorporating the anisotropic effects due to the confinement. We explore the connection between the usual three-dimensional Efimov physics (present for distances smaller than the confinement length) and the universal two-dimensional three-body physics (present at larger distances). We calculate three-body recombination rates and determine possible effects due to the confinement and their implication for experiments in quasi-two dimensional ultracold quantum gases with strong interactions. This work is supported by AFOSR-MURI.

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