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Universal Dimer-Dimer and Atom-Trimer Scattering for Identical Bosons CHRISTIAN LANGMACK, Ohio State University, DAEKYOUNG KANG, Massachusetts Institute of Technology, ERIC BRAATEN, Ohio State University — Identical bosons with a large positive scattering length a form universal bound states, including a shallow dimer, Efimov trimers, and universal tetramers. We present analytic approximations to the universal low-energy dimer-dimer and atom-trimer scattering amplitudes. The numerical parameters in the amplitude are determined using accurate 4-body results calculated by Deltuva. The coupled-channel scattering amplitudes are exactly unitary if the Efimov 3-body parameter is real. The analytic expressions for the scattering amplitudes allow the effects of deeply-bound diatomic molecules to be taken into account through the analytic continuation of the Efimov parameter.

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