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Abstract for an Invited Paper for the DAMOP10 Meeting of the American Physical Society

## Effective interaction of three bosons at low energy<sup>1</sup> SHINA TAN, Yale University

It is shown that the effective interaction strength of three bosons at small collision energies can be extracted from their wave function at zero energy. Asymptotic expansions of this wave function at large interparticle distances are derived, from which is defined a quantity D named three-body scattering hypervolume, which is an analog of the two-body scattering length. Given any finite-range interactions, one can thus predict the effective three-body force from a numerical solution of the Schrödinger equation. In this way, the constant D for hard-sphere bosons as well as that for bosons with large scattering length are computed (Efimov effect is present in the latter case). The ground state energy of three bosons in a low-frequency harmonic trap is computed, which depends on the constant D.

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