

Abstract Submitted
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Correlation between bound and continuous states of three identical particles¹ NICOLAS DOUGUET, VIATCHESLAV KOKOOLINE, Department of Physics of University of Central Florida — Study of degenerate cold gases represents today a wide field of physics, because phenomena in cold gases are relevant in several other fields of physics, like for instance, superconductivity or astrophysics. In this work, we discuss collisions of three identical particles in ultra-cold gases, by considering the symmetry of the total wave function of the system. Thus, we use either laboratory-frame, hyperspherical, or Jacobian coordinates, depending on which ones are best suited to describe the different configurations of the system. Precisely, for this purpose, we describe the wave function of the system at large distances, in order to understand the states of the particles before and after the three-body collision, but also consider the wave function at short distances during the actual collision process. Then, we are able to predict the possible quantum states of the particles after collision, by using symmetry considerations. In particular, we describe the recombination of the system into one free particle and a dimer. The result can be used for example, to identify possible decay products of quasi-stationary Efimov states.

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