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Three-atom recombination through a narrow Feshbach resonance in ^{6}Li JIAMING LI, LEONARDO DE MELO , LE LUO, Indiana University Purdue University Indianapolis, BO GAO, University of Toledo — We experimentally measure, and theoretically analyze the three-atom recombination rate, L_3, around a narrow s wave magnetic Feshbach resonance of ^{6}Li-^{6}Li around 543.3 Gauss. By examining both the magnetic field dependence and especially the temperature dependence of L_3 over a wide range of a few μK to 200 μK, we show that three-atom recombination through a narrow resonance follows a universal behavior as determined by the long-range van der Waals potential, and can be described by a set of rate equations in which three-body recombination proceeds via successive pairwise interactions. We expect the underlying physical picture to be applicable not only to the narrow s wave resonances, but also to resonances in other partial waves, and not only at ultracold temperatures, but also at higher temperatures. It points to some future directions towards a more complete understanding of three-body physics in general and molecule formation in particular.

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