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Optical control of Efimov state properties via blue-shielding¹ JOSE P. D'INCAO, JILA, Dept of Physics, University of Colorado, JIA WANG, Dept of Physics, University of Connecticut, GUIDO PUPILLO, Université de Strasbourg and CNRS, Strasbourg, France, CHRIS H. GREENE, Dept of Physics, Purdue University — In this work we explore the use of optical field to control fundamental properties of Efimov states. In the regime in which an external laser field is blue-detuned from an S-P transition, the repulsive interaction between ground (S) and excited (P) atoms can be used in order to shield the short-range effects in the three-body physics. As a result, one could expect an improvement of the lifetime of Efimov states as well as collision properties involving three ground state atoms. We develop a hyperspherical adiabatic representation in combination with the Floquet formalism, leading to a clear physical picture of the relevant atomic processes.

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