

Abstract Submitted
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Applications of Rydberg-dressing in few-body physics¹ JIA WANG, ROBIN CÔTÉ, Department of Physics, University of Connecticut, Storrs, CT — Using a laser far-detuned from a highly excited state, a ground state atom can be dressed by a small amount of Rydberg character. This technique is called Rydberg-dressing, which has attracted recent interest and was proposed to study many-body physics such as dipolar BEC, supersolid vortex crystals in BEC, and atomic Rydberg reservoirs for polar molecules. In this work, we apply Rydberg-dressing to the study of few-body physics. By using Rydberg-dressed interactions, ultracold chemical reactions can be manipulated and controlled. We also study the possibility of applying Rydberg-dressing to form a new kind of “chemical bond” and create ultra-long-range molecules.

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