

Abstract Submitted
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Cs $62D_J$ Rydberg-atom macrodimers formed by long-range multipole interaction¹ JIANMING ZHAO, Shanxi University, Taiyuan, GEORG RAITHEL, University of Michigan, Ann Arbor, and Shanxi University, Taiyuan — We report on long-range macrodimers formed by D -state cesium Rydberg atoms. Cesium $[62D_J]_2$ Rydberg-atom macrodimers, bonded via long-range multipole interaction, are prepared by two-color photo-association in a cesium atom trap. The first color (pulse A) resonantly excites seed Rydberg atoms, while the second (pulse B, detuned by the molecular binding energy) resonantly excites the Rydberg-atom macrodimers below the $[62D_J]_2$ asymptotes. The molecules are measured by extraction of auto-ionization products and Rydberg-atom electric-field ionization, and ion detection. Molecular spectra are compared with calculations of adiabatic molecular potentials. Initial lifetime estimates are presented.

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