

Abstract Submitted
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Ultra-long range Red-Shifted Cs Trilobite Molecules in a 1064 nm Crossed Dipole Trap¹ DONALD BOOTH, JIN YANG, JAMES SHAFFER, University of Oklahoma — We present results on our Cs ultracold Rydberg atom experiments involving trilobite molecules. A novel binding mechanism arises from the attractive, low-energy scattering of a Rydberg electron from a neighboring ground state atom. The states formed by this binding mechanism are referred to as trilobite states. The states we observe are to the red of the nS atomic resonance and, due to a large mixing with high angular momentum states, have large permanent dipole moments on the order of 1kD. To verify these dipole moments, it is necessary to observe the response to the molecules to an electric field. We present measurements of the Stark shifts of the trilobite states in Cs due to the application of a constant external electric field.

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