Abstract Submitted
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Observation of Cs Trilobite and Butterfly Molecules[1] JIN YANG, DONALD BOOTH, University of Oklahoma, MARGARITA RESCHKE, University of Stuttgart, SETH RITTENHOUSE, Western Washington University, HOSSEIN SADEGHPOUR, ITAMP, JAMES SHAFFER, University of Oklahoma — Ultralong range Rydberg molecules formed by one Rydberg atom and one ground state atom through the low-energy scattering of a Rydberg electron from the nearby ground state atom are attracting more and more interest because of the novel physics associated with them, such as the generation of kilo-Debye dipole moments. We report on our work on these molecules including the observation of ultralong range trilobite and butterfly molecules for Cs s-states. We compare and contrast these results to what has been observed in Rb experiments and new work of ours on Cs d-states. The experiments and theory directly show the role of state mixing, p-wave scattering resonances, and the Rydberg state structure of the Rydberg atoms involved in the formation of ultralong range Rydberg molecules.

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