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Spectroscopy of ^{87}Sr triplet Rydberg states[1] ROGER DING, JOSEPH WHALEN, SOUMYA KANUNGO, Rice University, SHUHEI YOSHIDA, Institute for Theoretical Physics Vienna University of Technology, JOACHIM BURGDRFER, Institute for Theoretical Physics, TU Vienna, THOMAS KILLIAN, F. BARRY DUNNING, Rice University — Quantum statistics play an important role in defining the properties of ultracold gases with strontium being particularly attractive as it posses both bosonic (^{84,86,88}Sr with $I = 0$) and fermionic (^{87}Sr with $I = 9/2$) isotopes. These effects can be probed with Rydberg states which offer a tunable length scale defined by the size of the Rydberg atom. Crucial to studies involving ^{87}Sr is the ability to excite to well-defined Rydberg states which requires a detailed understanding of the excitation spectrum. In ^{87}Sr, the spectrum is complicated by the presence of strong hyperfine interactions, resulting in a complex series of lines that is challenging to interpret. We present a combined experimental and theoretical characterization of the ^{3}Sand^3D$Rydbergseriesof^{87}$Sr in the range $n \sim 38 - 99$.

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