

Abstract Submitted
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**Measurements in high- L , $n=17$ and 20 Rydberg states of barium:
An investigation of ion core properties of Ba^+ .**¹ ERICA L. SNOW, SUNY
Fredonia, STEPHEN R. LUNDEEN, Colorado State University — Microwave spec-
troscopy studies with selective laser excitation for detection of Rydberg levels by
Stark ionization have been used to measure the fine structure intervals of $n=17$ and
 20 for a range of angular momentum states, $7 \geq L \geq 11$. Measurement of the en-
ergy splittings in the fine structure levels, due largely to interactions of the Rydberg
electron's angular momentum with the ion core spin, are also reported. The impli-
cations of these measurements on the determination of the ion core properties, such
as the polarizability and lifetimes, and associated matrix elements is investigated.

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