

Abstract Submitted  
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**Microwave spectroscopy of High-L n=28 Rydberg levels of Th<sup>2+</sup>:  
Polarizabilities and Moments of Fr-like Th<sup>3+</sup>**<sup>1</sup> JULIE KEELE, CHRIS  
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BACH, Kansas State University — Using the microwave/RESIS technique, the rel-  
ative positions of twenty Rydberg levels in n=28 of Th<sup>2+</sup> with L = 9, 10, 11, and 12  
have been determined with MHz precision. This structure pattern was analyzed to  
extract measurements of several important properties of the Fr-like Th<sup>3+</sup> ion that  
forms the core of this Rydberg system. Among the properties so determined are  
the quadrupole and hexadecapole moments, the scalar and tensor dipole polariz-  
abilities, and the scalar quadrupole polarizability. The analysis includes significant  
non-adiabatic corrections.

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