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Abstract for an Invited Paper  
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**Faculty Member for Research in an Undergraduate Institution Prize Talk: Research and Teaching through high-precision spectroscopy of heavy atoms<sup>1</sup>**  
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In recent decades, substantial experimental effort has centered on heavy (high- $Z$ ) atomic and molecular systems for atomic-physics-based tests of standard model physics, through (for example) measurements of atomic parity nonconservation and searches for permanent electric dipole moments. In all of this work, a crucial role is played by atomic theorists, whose accurate wave function calculations are essential in connecting experimental observables to tests of relevant fundamental physics parameters. At Williams College, with essential contributions from dozens of undergraduate students, we have pursued a series of precise atomic structure measurements in heavy metal atoms such as thallium, indium, and lead. These include measurements of hyperfine structure, transition amplitudes, and atomic polarizability. This work, involving diode lasers, heated vapor cells, and an atomic beam apparatus, has both tested the accuracy and helped guide the refinement of new atomic theory calculations. I will discuss a number of our recent experimental results, emphasizing the role played by students and the opportunities that have been afforded for research-training in this undergraduate environment.

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