

Abstract Submitted
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Indirect spin-orbit K splittings in strontium JIRAKAN NUNKAEW, EDWARD SHUMAN, THOMAS GALLAGHER, Department of Physics, University of Virginia, Charlottesville, VA 22904 — We use delayed field ionization to observe the resonance transitions of Sr from $5snf$ to $5sng$, $5snh$ and $5sni$. Each resonance transition is split by the indirect spin-orbit coupling, K splitting, of the Sr core. From the K splitting we extract the ionic dipole and quadrupole matrix, $\langle 5s|r|5p \rangle = 3.65(25)a_0$ and $\langle 5s|r^2|4d \rangle = 12(8)a_0^2$, respectively. We use the dipole matrix element to obtain the dipole polarizability of Sr^+ . We determine the quadrupole polarizability of Sr^+ by the use of dipole polarizability and the quantum defect differences of the adjacent ℓ states. This work has been supported by the U.S. Department of Energy, Office of Basic Energy Sciences.

Jirakan Nunkaew
Department of Physics, University of Virginia, Charlottesville, VA 22904

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