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Laser spectroscopy of metastable palladium at 340 and 363 nm
IBRAHIM SULAI, Bucknell University, PETER MUELLER, Argonne National Laboratory — Palladium has 6 stable isotopes. (A = 102, 104,105,106,108, and 110). We performed isotope shift measurements of the $4d^9 5s\,^3D_3 \rightarrow 4d^9 5p\,^3F_4$ transition at 340 nm, and the $4d^9 5s\,^3D_3 \rightarrow 4d^9 5p\,^3P_4$ transition at 363 nm. The measurements were performed using saturation absorption spectroscopy at the ~ 1 MHz level. In addition we also determined the hyperfine structure constants of Palladium-105 (I=5/2), the only isotope with non-zero spin, for the states involved in the two transitions. These measurements will serve as a benchmark for upcoming laser spectroscopic investigations of neutron rich palladium isotopes as a probe of their nuclear structure.

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