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Spectroscopy of the $^3\mathbf{F}^o_2$ state of Radium[1] DONALD BOOTH, Argonne National Laboratory, TENZIN RABGA, Argonne National Laboratory, Michigan State University, MICHAEL BISHOF, KEVIN BAILEY, MATTHEW DIETRICH, JOHN GREENE, PETER MUELLER, THOMAS O'CONNOR, Argonne National Laboratory, TIAN XIA, ZHENG-TIAN LU, University of Science and Technology of China, ROY READY, JAIDEEP SINGH, Michigan State University — Electric dipole moment (EDM) searches on diamagnetic atoms are sensitive methods to detect CP-violation in the nucleus. ^{225}Ra, due to its octupole deformation, is a good candidate for searches for EDMs in hadrons. We cool and trap ^{225}Ra to use in EDM measurements, the sensitivity of which can be improved by capturing larger numbers of atoms. We plan to enhance our atom number by implementing a blue Zeeman slower via the $^1S_0 \rightarrow {}^1P_1$ transition at 483 nm, which may increase the capture efficiency of our MOT by two orders of magnitude. However, due to the substantial branching ratio from $^1P_1$ into ^3D_J levels, several repump lasers are needed to close the transition. Toward this goal, we present spectroscopic data of the $^3F^o_2$ state of ^{226}Ra, which we plan to use for repumping the blue Zeeman slower. Using a novel technique, we measured the lifetime of the $^3F^o_2$ state and the oscillator strengths of the different transitions out of the state, allowing us to determine the branching ratios out of the state.

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