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Precise Lifetime Measurement of 2_1^+ State in ^{120}Te by Recoil Distance Doppler Shift Method J.R. TERRY, V. WERNER, WNSL - Yale, Z. BERRANT, Nuclear Research Center Negev, Beer-Sheva Israel, R.J. CASPERSON, A. HEINZ, WNSL - Yale, G. HENNING, Dept of Physics, ENS de Chachan, Chachan France, R. LÜTTKE, Technische Universitat Darmstadt, Germany, E.A. MCCUTCHAN, J. QIAN, WNSL - Yale, B. SHORAKA, Dept of Physics, University of Surrey, UK, E. WILLIAMS, R. WINKLER, WNSL - Yale — The lifetime of the first 2^+ state of ^{120}Te has been measured using a combination of inverse-kinematics Coulomb excitation well below the Coulomb barrier and the recoil distance Doppler shift (RDDS) method. This technique yields lifetimes with uncertainties of approximately 2%, due mostly to a large Doppler shift and nearly background-free gamma-ray spectra. The 2_2^+ and 4_1^+ excited states were also observed, providing a measure of the transition strengths to these states relative to the 2_1^+ state. Results are compared to calculations with and without $2p-2h$ proton intruder configurations across the $Z = 50$ shell gap. This work is supported by the U.S. DOE under contract No. DE-FG02-91ER-40609.

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