

Abstract Submitted
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LLNL's Precision Compton Scattering Light Source: Status & Applications F.V. HARTEMANN, F. ALBERT, S.G. ANDERSON, A.J. BAYRAMIAN, R.R. CROSS, C.A. EBBERS, D.J. GIBSON, T.L. HOUCK, R.A. MARSH, M.J. MESSERLY, M.Y. SHVERDIN, S.S. WU, R.D. SCARPETTI, C.W. SIDERS, D.P. MCNABB, R.E. BONANNO, C.P.J. BARTY, LLNL, C.E. ADOLPHSEN, T.S. CHU, E.N. JONGEWAARD, Z. LI, S.G. TANTAWI, A.E. VLIEKS, J.W. WANG, T.O. RAUBENHEIMER, SLAC — A precision, tunable, monochromatic ($< 0.4\%$ rms spectral width) source driven by a compact, high-gradient X-band linac designed in collaboration with SLAC is under construction at LLNL. High-brightness (250 pC, 3.5 ps, 0.4 mm.mrad), relativistic electron bunches will interact with a Joule-class, 10 ps, diode-pumped laser pulse to generate tunable \geq -rays in the 0.5-2.5 MeV photon energy range. This \geq -ray source will be used to excite nuclear resonance fluorescence (NRF) in various isotopes, of interest for homeland security, stockpile science and surveillance, nuclear fuel assay, and waste imaging and assay. The source current status will be discussed, along with important applications, including NRF and *in situ* ps thermal measurements. This work performed under the auspices of the U.S. DoE by LLNL under Contract DE-AC52-07NA27344, and funded by the DHS DNDO.

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