

Abstract Submitted
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Precision 0.5 GW X-band rf system for advanced Compton scattering source¹ T.S. CHU, G. ANDERSON, D. GIBSON, F.V. HARTEMANN, C.P.J. BARTY, LLNL, A. VLIEKS, S. TANTAWI, E. JONGEWAARD, SLAC, S.G. ANDERSON, LLNL, LLNL COLLABORATION, SLAC COLLABORATION — A Mono-Energetic Gamma-Ray (MEGa-Ray) Compton scattering light source is being developed at LLNL. The electron beam for the Compton scattering interaction will be generated by a X-band RF gun and a X-band LINAC at the frequency of 11.424 GHz. High power RF in excess of 500 MW is needed to accelerate the electrons to energy of 250 MeV or greater for the interaction. Two high power klystron amplifiers, each capable of generating 50 MW, 1.5 msec pulses, will be the main high power RF sources for the system. These klystrons will be powered by state of the art solid-state high voltage modulators. A RF pulse compressor, similar to the SLED II pulse compressor, will compress the klystron output pulse with a power gain factor of five. This will give us 500 MW (0.5 GW) at output of the compressor. The compressed pulse will then be distributed to the RF gun and to the LINAC with specific phase and amplitude control points to allow for parameter control during operation. This high power RF system is being designed and constructed. In this paper, we will present the design, layout, and status of this RF system.

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