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Absolute calibration of a compact gamma-ray spectrometer for high intensity laser plasma experiments S. SINGH, ELI Beamlines, Prague, Czech Republic, A. GARCIA, A. FERRARI, M. MOLODTSOVA, R. SCHWENGNER , Institute for Radiation Physics, HZDR, Germany, L. MOREJON, R. VERSACI, D. KUMAR, ELI Beamlines, Prague, Czech Republic, T. COWAN, Institute for Radiation Physics, HZDR, Germany — Copious amounts of gamma rays are generated in high intensity laser matter experiments, either by bremsstrahlung or by inverse Compton scattering. Measurements of multi-MeV gamma rays in such experiments provide direct indication of hot electrons generated during the interaction. A spectrometer based on forward Compton scattering was recently tested by Espy et al. [1]. We report on an improved design of a similar spectrometer which is significantly more compact (70 cm x 25 cm x 25 cm) and thus extremely convenient to use in laser plasma experiments. In this presentation, we describe the design considerations and recent results of an absolute calibration of the gamma-ray spectrometer. The calibration was performed using a bremsstrahlung source at different electron energies, i.e. 11, 13, 15 and 18 MeV [2]. Experimental spectra show a systematic increase of the maximum cut-off energy, temperature and flux. The results indicate that the spectrometer is effective for an energy range of $4-20$ MeV with 5-10% energy resolution. References [1] M. A. Espy, A. Gehring, A. Belian et al., Proc. Of SPIE Vol. 9783 97834V-1. [2] R. Schwengner et al., Nucl. Instrum. Meth. A: Accelerators, 555.12 (2005), pp. 211-219.

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