Abstract Submitted
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The BELLA Center Hundred Terawatt laser system for photon sources and user experiments[1] TOBIAS OSTERMAYR, HAI-EN TSAI, ROBERT ETTELBRICK, LIONA FAN-CHIANG, ROBERT JACOB, ALEXANDER LAUT, OCEAN ZHOU, JEROEN VAN TILBORG, FUMIKA ISONO, SAMUEL K. BARBER, REMI LEHE, JEAN-LUC VAY, ANTHONY GONSALVES, KEI NAKAMURA, CSABA TOTH, CARL SCHROEDER, CAMERON GEDDES, ERIC ESAREY, Lawrence Berkeley National Laboratory — Thomson scattering of laser pulses from relativistic electron beams can produce MeV photon beams with narrow energy spread. Applications are foreseen in nuclear nonproliferation, medicine and other fields. We discuss performance, stability and alignment procedures for multibeam Thomson experiments using a Ti:Sapphire based 100 TW class laser system with two arms, dedicated to light source development. Both laser arms are independently tunable and compressible multipass-amplifier arrays (2.8 J and 0.7 J on target, down to 40 fs pulse duration, repetition rate of 5 Hz) with the seed-beam split off just after the common CPA stretcher. An independently tunable 40 fs probe beam is available in various configurations. Stable electron beams and Thomson Scattering have been established with further development ongoing. This flexible facility is open to users through LaserNetUS and successful user experiments have been conducted.

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