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Development of the L2-DUHA dual output front end at ELI-ERIC

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The 100 TW DPSSL-OPCPA L2-DUHA laser system is under development at ELI-ERIC, with the goal of being the driver for the Laser Plasma Accelerator (LPA) of the LUIS-beamline, an incoherent Extreme Ultraviolet (EUV) radiation setup under development at ELI-ERIC, aiming to produce the high-quality electron beam required for a LPA-based Free Electron Laser (FEL).

The L2-DUHA broadband front-end is based on a 2kHz Yb:YAG thin disk regenerative amplifier-pumped OPCPA seeded by a supercontinuum. It will provide a 1mJ near Infrared (NIR) beam for seeding a high energy OPCPA chain, which will be used as the driver for the laser-plasma accelerator in the LUIS-beamline. In addition, a multi-mJ, synchronized mid IR auxiliary beam for high harmonic generation is under development. Both outputs are generated via supercontinuum in YAG crystals and are passing through pre-amplification OPA stages using Barium Borate (BBO) crystals.

In this presentation, we present the first characterization of the dual output L2-DUHA broadband front-end.

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