MATTER AND TECHNOLOGIES

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BEETLE –High average power laser-plasma accelerator using a 1 kW Yb-based laser with nonlinear compression

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Laser-plasma acceleration (LPA) is a promising technology for a future compact accelerator. However, current Ti:Sapphire laser technology typically supports few-hertz repetition rates, with scaling to higher rates being challenging. High energy, kHz-level Yb-based laser systems have longer, sub-picosecond pulses. After nonlinear spectral broadening in a multipass cell, these pulses can be compressed to tens of fs duration, becoming a promising LPA driver alternative.
In this poster, we introduce the BEETLE project, recently initiated at DESY, that aims to demonstrate high-energy, high repetition rate electron acceleration. The driver laser pulses, provided by a 5 kHz Yb-based laser system (Trumpf Scientific Lasers), have an energy of 200 mJ and are compressible to ~30 fs via spectral broadening. We present an overview, goals and the current status of the project.

Speed talk:

Normal speed talk selection

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