ID contributo: **244** Tipo: **Poster (participant)**

Towards the first electron acceleration with an industrial Yb:YAG laser

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High average power, kHz laser-plasma acceleration is an emerging technique which could supply few MeV, few femtosecond electron bunches with high average current. Here we present exciting experimental results, drawing the path towards the first electron acceleration driven by an industrial Yb:YAG laser at multi-kHz repetition rate.

KHz lasers usually deliver few mJ pulses and, hence, compressing the output pulse duration down to the few-cycle regime is essential in order to efficiently drive plasma waves. We report on record post-compression results, where 10mJ, 1.2ps pulses have been compressed to below 10fs, with 70% efficiency. The interaction of these pulses with an high density nitrogen plasma shows exciting evidence of plasma waves being driven.

Furthermore, Particle-In-Cell simulations including the real pulse, the retrieved plasma density and the measured spot size prove the potential of such pulses to accelerate electrons in the few MeV regime.

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