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## Increasing repetition rate of PW laser drivers for modern secondary sources

We report on the achievements and challenges on high repetition rate lasers used as drivers for electron or proton acceleration. We recently demonstrated 700TW at 10Hz repetition, based on a new generation of high repetition rate pump lasers. This system under commissioning is expected to reach 2PW at 10Hz, opening the way to high flux GeV electron sources, or >100MeV proton sources. Moreover, modern electron accelerators require even higher repetition rate, from 100Hz to 1kHz. We will present the challenges and ongoing developments in Amplitude on 100Hz to 1kHz multi-Joule class pump lasers, as well as thermal management of the main amplifier and compressor. Diagnostics and active feedback loops are also key success factors in order to ensure high stability electron or proton sources in the near future.

These high repetition rate laser drivers are expected to pave the way to industrial or medical applications through X-ray imaging using betatron radiation, bremsstrahlung or all-optical Inverse-Compton Scattering, as well as particle therapy using electron or proton sources.

### Working group

WG6 : Radiation generation, medical and industrial applications

**Primary authors:** COURJAUD, Antoine (Amplitude Laser); Dr BUSSIÈRE, Benoit (Amplitude Laser); Dr FALCOZ, Franck (Amplitude laser); Dr ZHANG, Kaikai (Amplitude laser); Dr PAUL, Pierre-Mary (Amplitude Laser)

**Presenter:** COURJAUD, Antoine (Amplitude Laser)

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