Abstract Submitted
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Petawatt class Laser with High Repetition Rate for the excitation of x-ray lasers[1] ALEX ROCKWOOD, YONG WANG, SHOUJUN WANG, BRADLEY LUTHER, JORGE ROCCA, Colorado State University — X-ray lasers require powerful pump sources for excitation. We describe a Ti:sapphire laser designed to generated pulses of 0.45 Petawatt peak power at multi-Hz repetition rates. The laser consists of a Ti:sapphire master oscillator and chain of five Ti:sapphire amplifiers operating in chirped-pulse amplification. The last stages of amplification are pumped by the frequency doubled output of Nd:glass slab ampliers. The first tests of the Ti:sapphire amplier chain produced pulses of 32 J energy before compression with a central wavelength of 800 nm, with uniform beam profile. Compression to 50 fs in a 70% efficient grating compressor will yield a peak power of 0.45 Petawatts. This use of the system in the excitation of sub- 100nm wavelength soft x-ray lasers will be discussed.

[1]Petawatt class Laser with High Repetition Rate for the excitation of x-ray lasers

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