

# LENGTH SCALING OF THE ELECTRON ENERGY GAIN IN THE SELF-GUIDED LASER WAKEFIELD REGIME USING A 150 TW ULTRA-SHORT PULSE LASER BEAM

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## *Abstract*

Recent laser wakefield acceleration experiments at the Jupiter Laser Facility, Lawrence Livermore National Laboratory, will be discussed where the Callisto Laser has been upgraded and has demonstrated 60 fs, 10 J laser pulses. This 150 TW facility is providing the foundation to develop a GeV electron beam and associated betatron x-ray source for use on the petawatt high-repetition rate laser facility currently under development at LLNL. Initial self-guided experiments have produced high energy monoenergetic electrons while experiments using a multi-centimeter long magnetically controlled optical plasma waveguide are investigated. Measurements of the electron energy gain and electron trapping threshold using 150 TW laser pulses will be presented.

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