

A High Current, High Gradient, Laser Excited, Pulsed Electron Gun*, K. BATCHELOR**, G.I. DUDNIKOVA, J.P. FARRELL**, J. SMEDLEY***, T. SRINIVASAN-RAO***, - This paper describes the design of a pulsed electron gun that can be used as an FEL, as an injector for electron linear accelerators or for rf power generation. It comprises a 1 to 5 MeV, 1 to 2 ns pulsed power supply feeding a single diode acceleration gap. The cathode of the diode is photo-excited by a pulsed laser operating in the UV regime with pulse length variable from 0.1 to 10 ps. Characteristics of the beam parameters of a $> \sim 1$ nC charge in an acceleration gradient of $> \sim 1$ GV/m will be studied. Computations of the beam parameters as a function of electrode configuration and peak electron current are presented together with conceptual designs for the power supply, laser and beam diagnostics systems.

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