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Pulsed Power Projects within the National Ignition Facility

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The National Ignition Facility, the most energetic laser in the world, focuses 192 laser beams on a pea size target inside a vacuum chamber to create temperatures and pressures that exist naturally only in the cores of stars and giant planets. Besides relying on three major pulsed power systems, the NIF facility is the shell for several other pulsed power developments, with applications ranging from the front end of the laser to the diagnostics of the physics experiments.

In this presentation we will discuss our work and provide a projection into the future of the NIF pulsed power projects such as a diode pumped 1^{st} Nd: Glass amplifier, RF tools development for monitoring the health of the Main Amplifiers capacitor banks, and solid state pulser development that allows (timescale) triple pulsing of the Plasma Electrode Pockels Cells (PEPC) during Advanced X-Ray Radiography Capability shots (ARC). We will also describe other projects that are not part of the laser design but contribute to the success of the physics experiments such as the design of a pulser that will provide a uniform multi-Tera Gauss magnetic field, and finally the contribution from the pulsed power group on a fast gated cathode design for streak cameras permitting significant reduction of the effects from background light.

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