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## 3P79 - Electro-Optical Measurement of Electric Fields for Pulsed Power Systems

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The electric field strength from the cathode to the anode (or Voltage) of a pulsed power machine is one of the most important operating parameters of the device. However, to date, accurate and precise Voltage measurements on these high energy pulsed power systems have proved difficult if not virtually impossible to perform. In many cases, the measurements to be performed take place in an environment cluttered with electromagnetic interference (EMI), radio frequency interference (RFI), electron pollution, potential for electrical discharge (or arcing), limited physical access or deemed unsuitable due to radiation safety concerns. We report on an electro-optical based approach to measuring strong, narrow-pulse-width electric fields that requires no interfering metallic probes or components to disturb the measurement field. Here we focus on device theory, operating parameters and a laboratory experiment.

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