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**Initial Comparison of EMPIRE Simulations with Diodes Driven by the Photoelectric Effect**[1] KEITH CARTWRIGHT, CHRISTOPHER MOORE, KATE BELL, TIMOTHY FLANAGAN, PEGGY CHRISTENSON, MATTHEW BETTENCOURT, TIMOTHY POINTON, ELAINE RAYBOURN, NICHOLAS ROBERDS, Sandia National Laboratories — EMPIRE is a new EM plasma simulation capability under development that includes kinetic (PIC) plasma representation and DSMC collisions. The EMPIRE code is designed to run on advanced hardware, e.g. ARM and GPGPUs, through a Kokkos abstraction layer to enable portability. For this initial comparison we will focus on testing the electromagnetic solve in enclosed cavities fielded at the Z Machine and the NIF. Powerful, pulsed x-ray sources available at these facilities (radiating terawatts in nanoseconds) drive plasmas in cavities due to x-ray-surface interactions. Prior to irradiation, cavity volumes have either background partial pressures of inert gas, or are at near vacuum ($< 5 \times 10^{-5}$Torr). Upon irradiation, surface photoelectrons are modeled as well as effects due to extreme surface heating caused by x-ray energy deposition that drives thermionic emission and thermally enhanced neutral desorption. We will compare the results of these model to experiments.

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