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Electromagnetic Near Field Measurements of Two Critical Assemblies JEFFREY GOETTEE, TIM GOORLEY, DOUGLAS MAYO, WILLIAM MYERS, JOETTA GODA, LANL, FRANK SAGE, WSMR — Preliminary measurements of the fast metal nuclear reactors at the National Criticality Experiments Research Center (NCERC) and at White Sands Missile Range (WSMR) within the past year characterize the very near field environment of these critical assemblies. Both reactors are fast, highly enriched uranium metal reactors and can be operated in a burst mode above prompt supercritical. Initial measurements of the electric and the magnetic fields within the reactor cell are consistent between the two facilities, and begin to describe the dependance on distance and polarization as might be assumed from initial Monte Carlo modelling of these facilities. The amplitude and time variation of the electric and magnetic fields are consistent with burst time scales. The polarization is consistent with the geometry of the source and with Compton scattering from fission gammas as the dominant ionization mechanism. An overview of the two fast neutron sources and the excursion dynamics, the experimental details, and summary of the modelling calculations will be provided as background.

Jeffrey Goettee
LANL

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