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**Laboratory measurements of the dynamics and reconnection of large B fields in high energy density plasmas**

KARL KRUSHELNICK, University of Michigan

Advances in laser technology have enabled the generation of ultra-short duration ( $< 100$  fsec) laser pulses which can be focused to unprecedented intensities ( $> 10^{22}$  W/cm<sup>2</sup>). The magnetic fields in plasmas produced by such intense lasers can reach Gigagauss levels. I will report results from a series of high power laser experiments performed at the University of Michigan and at the Rutherford Appleton Laboratory in the UK which have used new diagnostic techniques to measure the magnitude of these fields as well as their evolution on femtosecond timescales. The dynamics of Megagauss magnetic fields in a reconnection geometry were also measured and the generation of energetic plasma jets resulting from the reconnection process was observed.