

Abstract Submitted  
for the DPP19 Meeting of  
The American Physical Society

**Low-frequency electromagnetic pulse radiation from metal targets irradiated by a short pulse laser**<sup>1</sup> GEORGE PETROV, ASHER DAVIDSON, BENJAMIN ROCK, DANIEL GORDON, BAHMAN HAFIZI, JOSEPH PENANO, United States Naval Research Laboratory — A theoretical study of low-frequency radiation from a short laser pulse ( $<1$  ps) normally incident on metal targets is presented and applied to experiments at NRL. The laser field drives large time-varying currents ( $\text{MA}/\text{cm}^2$ ) in the skin layer of the metal, which emit radiation that peaks in the THz range, but have a significant component in the microwave band. A one-dimensional electrostatic model for Cu is coupled to a radiation model for an infinitely thin flat disc (thickness – one skin depth, diameter – laser focal spot size). The salient characteristics of the emitted radiation are calculated, which include radiated power, energy, and spectra as a function of laser energy and angle of observation. Work supported by the NRL Base Program.

<sup>1</sup>This work is supported by the NRL Base Program

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Date submitted: 03 Jul 2019

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