118. Title: Microwave radiation mechanism in a pulse-laser-irradiated Cu foil target revisited

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Abstract: The microwave radiation mechanism in a Cu-based foil target irradiated by an intense laser pulse has been investigated. Microwave emission in the frequency range 0.5-4 GHz has been observed from a 200 ps laser pulse of intensity about 10(12)Wcm(-2) normally incident on the target surface. The total microwave power and energy emitted from the interaction were found to be about 0.4W and 2 nJ, respectively, corresponding to an efficiency of coupling laser energy to microwave energy of 2x10(-8). The result agrees well with quadrupole radiation calculated based on a circuit model of a laser plasma, which indicates that the radiative process can be explained by magnetic dipole or electric quadrupole radiation from the laser-produced symmetric poloidal current distribution at the plasma-target interface.