

Abstract Submitted
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Generation of RF Radiation by Femtosecond Atmospheric Filaments TRAVIS GARRETT, Air Force Research Lab - Kirtland — Atmospheric filaments from femtosecond scale laser pulses are famous for generating THz radiation, and theories have been developed that explain its production by both one and two color pulses. Recent experimental work at the AFRL has characterized the distinct GHz radiation that is also generated by filaments, and has determined that a different physical mechanism is needed for its production. We have developed particle-in-cell simulations that show that the expansion of a hot outer shell of electrons from the plasma column is responsible for the longitudinal currents that drive the RF radiation. The frequency profile, field amplitude, angular distribution and pressure dependence of the simulated RF radiation all closely match the measured results from the lab.

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