

Abstract Submitted
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Single-shot measurements of laser-induced avalanche breakdown demonstrating spatial and temporal control by an external source¹ DANIEL WOODBURY, JARED WAHLSTRAND, ANDY GOERS, LINUS FEDER, BO MIAO, GEORGE HINE, FATHOLAH SALEHI, HOWARD MILCHBERG, University of Maryland, College Park — We report on the use of single-shot supercontinuum spectral interferometry (SSSI) to make temporally and spatially resolved measurements of laser-induced avalanche breakdown in ambient air by a 200 ps pulse. By seeding the breakdown using an external 100 fs pulse, we demonstrate control over the timing and spatial characteristics of the avalanche. In addition, we calculate the collisional ionization rates at various laser intensities and demonstrate seeding of the avalanche breakdown both by multiphoton ionization and by photodetaching ions produced from a radioactive source. These observations provide proof-of-concept support for recent proposals to remotely measure radioactivity using laser-induced avalanche breakdown.

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