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**Pulsed Mid-infrared Radiation from Spectral Broadening in Laser Wakefield Simulations**[1] WENXI ZHU, JOHN PALASTRO, THOMAS ANTONSEN, IREAP University of Maryland — Spectral red-shifting of high power laser pulses propagating through underdense plasma can be a source of ultrashort mid-infrared (MIR) radiation. During propagation, a high power laser pulse drives large amplitude plasma waves, depleting the pulse energy. At the same time, the large amplitude plasma wave provides a dynamic dielectric response that leads to spectral shifting. The loss of laser pulse energy and the approximate conservation of laser pulse action imply that spectral red-shifts accompany the depletion. We investigate, through simulation, the parametric dependence of MIR generation on pulse energy, initial pulse duration, and plasma density.

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Thomas Antonsen
IREAP University of Maryland

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