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On the Observation of Jitter Radiation in Solid-Density Laser-Plasma Laboratory Experiments[1] BRETT KEENAN, MIKHAIL MEDVEDEV, Univ of Kansas — Plasmas created by high-intensity lasers are often subject to the formation of kinetic-streaming instabilities, such as the Weibel instability, which lead to the spontaneous generation of high-amplitude, tangled magnetic fields. These fields typically exist on small spatial scales, i.e., "sub-Larmor scales". Radiation from charged particles moving through small-scale electromagnetic (EM) turbulence, known as jitter radiation, has spectral characteristics distinct from both synchrotron and cyclotron radiation, and it carries valuable information on the statistical properties of the EM field structure and evolution. Consequently, jitter radiation from laser-produced plasmas may offer insight into the underlying electromagnetic turbulence. Here we investigate the prospects for, and demonstrate the feasibility of, such direct radiative diagnostics for mildly relativistic, solid-density laser plasmas produced in lab experiments.

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Mikhail Medvedev
Univ of Kansas

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