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## Electromagnetic radiation from wave turbulence driven by electron beams in solar plasmas

*mercredi 26 février 2020 16:00 (15 minutes)*

Solar radio bursts of Type III are believed to result from a sequence of physical processes ultimately leading to electromagnetic wave emissions near the electron plasma frequency and its second harmonic. The radiation bursts are due to energetic electron beams accelerated during solar flares. When propagating in the solar corona and the interplanetary wind, these fluxes excite Langmuir and upper-hybrid wave turbulence, which can be further transformed into electromagnetic radiation. It is believed that, in a homogeneous plasma, Langmuir turbulence evolves due to three-wave interaction processes. Large-scale 2D3V Particle-In-Cell simulations have been performed with the fully kinetic code Smilei, using parameters typical of Type III solar radio bursts. The excitation of upper-hybrid wave turbulence by energetic electron beams propagating in magnetized plasmas leads ultimately to electromagnetic emissions near the fundamental and the harmonic plasma frequencies.

### Field

Stellar physics (including solar physics)

**Auteur principal:** GAUTHIER, Gaetan (LPP)

**Co-auteurs:** Prof. SAVOINI, Philippe (LPP); Prof. KRAFFT, Catherine (LPP)

**Orateur:** GAUTHIER, Gaetan (LPP)

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