Abstract Submitted
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Observation of the self-modulation of electron and positron bunches in plasmas PATRIC MUGGLI, Max Planck Institute for Physics, E209 COLLABORATION — Relativistic, charged particle bunches with length longer that the electron plasma wavelength are subject to the transverse self-modulation instability (SMI). The instability arises from the interplay between the low level transverse wakefields (focusing/defocusing) and the bunch density that drives the wakefields. As a result, the bunch density becomes periodically modulated with a period approximately equal to the electron plasma wavelength. The modulated bunch can then resonantly drive wakefields to large amplitudes. Measurements with the SLAC-FACET electron and positron bunches show clear signs of the occurrence of the SMI. The experimental setup as well as the results obtained to date will be presented.

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