Abstract Submitted
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**Grid-based kinetic simulations of ladder climbing by electron plasma waves**[1] KENTARO HARA, Texas A&M University, IDO BARTH, Department of Astrophysical Sciences, Princeton University, EREZ KAMINSKI, Birmingham-Southern College, ILYA DODIN, NATHANIEL FISCH, Department of Astrophysical Sciences, Princeton University — Wave-plasma interactions have been well studied in collisionless plasmas and the grid-based kinetic model is a promising tool to accurately model phase space structures in plasmas. It was recently proposed by Barth et al. [Phys. Rev. Lett. **115**, 075001 (2015)] that the energy of plasma waves can be moved up and down the spectrum using chirped modulations of plasma parameters. Depending on whether the wave spectrum is discrete (bounded plasma) or continuous (boundless plasma), this phenomenon is called ladder climbing or autoresonant acceleration of plasmons. In this talk, ladder climbing of electron plasma waves is investigated by applying a chirped external electric field using a fully nonlinear Vlasov-Poisson simulation of collisionless bounded plasma. It is shown that, in agreement with the basic theory, plasmons survive substantial transformations of the spectrum, i.e., Landau-Zener transitions, and are destroyed only when their wave numbers become large enough to trigger Landau damping.

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