

O4.J501 Plasma grating: Giant standing ion acoustic waves

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See the full abstract here <http://ocs.ciemat.es/EPS2019ABS/pdf/O4.J501.pdf>

We study formation of large amplitude standing ion acoustic waves (SIAW) by nonlinear phase-locking (autoresonance) with a weak, chirped frequency standing ponderomotive drive. These waves comprise a nonlinear two-phase solution each phase locked to one of the two traveling waves comprising the drive. The autoresonance in the system is guaranteed provided the driving amplitude exceeds a threshold. The phenomenon is analysed via Whitham's averaged variational principle applied to a nonlinear warm fluid model. The local ion and electron densities in the autoresonant SIAW may significantly exceed the initial unperturbed plasma density and are only limited by the kinetic wave-breaking. Work supported by the NSF-BSF grant #1803874 (BSF #6079), and performed under the auspices of the U.S. DOE by LLNL under Contract No. DE-AC52-07NA27344, with support from the LLNL-LDRD Program under Project tracking #18-ERD-046.

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