

Abstract Submitted  
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**New insights into ion acoustic wave decay** THOMAS CHAPMAN, RICHARD BERGER, BRUCE COHEN, EDWARD WILLIAMS, LLNL, STEPHAN BRUNNER, EPFL — The stability of Ion Acoustic Waves (IAWs) is of importance to inertial confinement fusion experiments due to its potential to saturate stimulated Brillouin scattering. Using high-resolution fully-kinetic (for both electron and ion species) Vlasov simulations, the nature of IAW decay is investigated over a broad parameter space for both driven and undriven (free) waves. Scalings of the instability growth rate with the fundamental IAW amplitude and wave number are presented which are applicable across most of the relevant parameter space. The onset of turbulence arising due to the growth of subharmonic IAW modes is found to greatly change the plasma response to a fixed-frequency driver. This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344 and funded by the Laboratory Research and Development Program at LLNL under project tracking code 12-ERD-061.

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