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Relating Hot Electron Magnetic Confinement to Hard X Ray Spectra in NIF Hohlraums[1] BENJAMIN REICHELT, JACOB PEARCY, ARIJIT BOSE, RICHARD PETRASSO, CHIKANG LI, Massachusetts Institute of Technology, EDUARD DEWALD, OTTO LANDEN, Lawrence Livermore National Laboratory, LLNL COLLABORATION — In ICF hohlraums, high laser intensities drive multiple types of instabilities capable of accelerating electrons to supra-thermal velocities. These hot electrons I nteract with the hohlraum plasma and walls to produce hard x-ray bremsstrahlung emission that can be seen in various diagnostics like NIF's FFLEX. This hot electron flux can be confined by spontaneously generated magnetic fields within the hohlraum plasma and result in x-ray spectra with features that give information about the magnetic and electric fields within the hohlraum. Recent work by Dewald et al. [PRL 116, 075003 (2016)] has shown that for low gas fill hohlraums during the picket pulse, the predominant LPI mechanism results in a highly directional hot electron flux emanating from the laser entrance hole, which is simpler to model than the main pulse. In this work, we develop a model for plasma bremsstrahlung emission in this regime and compare it to measured FFLEX data to provide physical insight into the features seen.

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