Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

EBW and Whistler propagation and damping in a linear device[1]
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— Linear plasma devices are an economic method to study plasma-material interactions under high heat and particle fluxes. ORNL is developing a large cross section, high-density helicon plasma generator with additional resonant electron heating to study plasma-material interactions in ITER like conditions. The device will produce a heat flux of 10-20 MW/m^2 and particle flux of 10^{24} /m^2/s in a high recycling plasma near a target plate with a magnetic field of $\sim$1 T. As part of this effort, heating of overdense plasma is being studied using a microwave-based plasma experiment. The plasma is initiated with a high-field launch of 18 GHz whistler waves producing a moderate-density plasma of n_e $\sim 10^{18}$ m^{-3}. Electron heating of the overdense plasma can be provided by either whistler waves or EBW at 6 and 18 GHz. A modified GENRAY (GENRAY-C) ray-tracing code has been used to determine EBW and ECH whistler wave accessibility for these overdense plasmas. These results combined with emission measurements will be used to determine launcher designs and their placement.

[1]ORNL is managed by UT-Battelle, LLC, for the U.S. DOE under contract DE-AC-05-00OR22725.

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Date submitted: 25 Jul 2011 Electronic form version 1.4