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Effect of Array Phasing on the HHFW Power Coupling Through the NSTX and NSTX-U Edge Plasmas[1] P.M. RYAN, L.A. BERRY, D.L. GREEN, ORNL, E.F. JAEGER, XCEL Engineering Inc, N. BERTELLI, J.C. HOSEA, R. PERKINS, C.K. PHILLIPS, G. TAYLOR, J.R. WILSON, PPPL —
The plasma load presented to the HHFW system in the upcoming NSTX-U experiment will differ from that of NSTX due to increased operational parameters: B_T increased from 0.55 to 1.0 T, I_P from 1 MA to 2 MA, and the addition of a second neutral beam (7 MW to 14 MW). Changes in the ICH harmonics, beta, and the fast ion population are expected to change the power division between the electrons, thermal and fast D^+, and H^+ minorities; these are being calculated with the AORSA code, recently extended to include the edge plasma [1]. Power coupling through and propagation within the edge plasma are being analyzed as a function of plasma gap, edge density profile, and array phasing. The optimal launched spectrum for core power absorption may well differ from that needed for effective power transmission though the edge plasma, and is the primary focus of this study. Collisional damping is being used as a proxy dissipation mechanism to study the anomalous power loss associated with normal modes in the scrape-off layer [2]. The AORSA analysis is being guided by recent experimental measurements of HHFW power deposition in the NSTX scrape off layer [3].

[1] D. L. Green, et al., *Phys. Rev. Lett.,* **107** (2011), 145001
[2] N. Bertelli, invited paper, this conference
[3] R. J. Perkins et al, *Phys. Rev. Lett.*, **109** (2012), 045001

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