

Abstract Submitted
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Taming the ICRF Antenna Plasma Edge Interaction via Novel Field-Aligned ICRF Antenna on Alcator C-Mod¹ S.J. WUKITCH, Y. LIN, J. TERRY, A. HUBBARD, R.T. MUMGAARD, THE ALCATOR C-MOD TEAM, MIT PSFC, M.L. REINKE, ORNL — Although ICRF is attractive for bulk plasma heating due to favorable wave propagation, ICRF antenna edge plasma interaction remains a challenge. Recent experiments reveal that RF-induced potentials in the scrape-off layer and antenna impurity source are dependent on the power ratio between the inner and outer current straps, P_{cent}/P_{out} . Using a modified field aligned antenna, the transmission line network connected the center two straps at $[0, \pi]$ to one transmitter and the outer two straps another transmitter. This experiment was motivated by positive three strap antenna results from ASDEX-U [V. Bobkov et al 2016 Nucl. Fusion 56 084001]. With -30 dB decoupling, we scanned P_{cent}/P_{out} from zero to greater than 1000. A minimum in the RF enhanced potential and local impurity source is observed for P_{cent}/P_{out} greater than 1 and less than 4 with a gradual rise in impurity source for P_{cent}/P_{out} greater than 4. This minimum correlates where the image currents in the antenna limiters are expected to be smallest. We also tested antenna operation in $[0, 0, \pi, \pi]$ antenna phasing and found excessive local impurity production despite the antenna being field aligned. This antenna phasing excites low k and potentially have higher coupling. Latest results and analysis will be presented

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