**Operating The Upgraded NSTX HHFW Antenna Array In An Environment With Li-coated Surfaces***

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The single-feed, end-grounded straps of the NSTX 12-strap HHFW antenna array have been replaced with double-feed, center-grounded straps to reduce the voltages in the vicinity of the Faraday shield (FS) for a given strap current. The strap spacings to the FS and to the back plate were increased by 3 mm to decrease the electric fields for a given voltage. The electric fields near the FS have been reduced by a factor of ~1.5 for the same strap currents, permitting a direct examination of the roles that internal fields play in determining antenna power limits in plasmas. Extensive RF/plasma conditioning of the antenna was required to remove enough of the evaporated Li deposits from prior wall conditioning to permit coupling in excess of 4 MW to L-mode plasmas in 2009. Most arcs were associated with expulsion of Li from the FS/antenna frame surfaces. The center-grounded straps were less susceptible to arcing during ELMing H-mode plasmas. Reliable operation above 2 MW was difficult after the installation of the Liquid Lithium Divertor[1] in 2010. Li-compound "dust", formed during multiple vents to Ar, was found in the antennas after this run and is believed to have contributed to the reduced power limit.

[1] H. W Kugel, et al., Fusion Eng Des **84** (2009) 1125-1129

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