

## **NSTX-U Weekly Report (August 11, 2017)**

**FY 2017 status: NSTX-U is in a maintenance and repair outage.**

### **NSTX-U Research (J. Menard)**

The paper “The role of rectified currents in far-field RF sheaths and in SOL losses of HHFW power on NSTX” by R.J. Perkins, et al. has been published online in Nuclear Materials and Energy [<http://dx.doi.org/10.1016/j.nme.2017.04.013>]. Radio-frequency rectification has been proposed as the mechanism responsible for converting high-harmonic fast-wave (HHFW) power in the NSTX into a heat flux to the divertor. In this paper, the importance of current rectification is identified as opposed to voltage rectification in analysis of NSTX divertor operation during HHFW heating. When rectified currents are accounted for in first-principle models for the heat flux to the tiles, a larger enhancement of the heat flux is predicted due to rectification than would have been attained assuming voltage rectification alone. This work is important for minimizing SOL losses of HHFW power in NSTX-U but may also have implications for near-field studies of ICRF antennae.