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Recent results from the National Spherical Torus Experiment[1]
ERIC FREDRICKSON, PPPL, NSTX TEAM — Upgrades to NSTX for the 2010 campaign include the installation of its Liquid Lithium Divertor (LLD) for improved divertor pumping to control edge collisionality. The LLD forms an annular ring in the lower outer divertor and consists of four plates, coated on their plasma facing surface with a porous molybdenum layer to hold lithium, which can be heated to $\sim$300°C. Several new diagnostics have been installed to investigate the LLD, including thermocouples, Langmuir probes, spectroscopy and fast cameras. The scaling of the peak heat flux and profile width with toroidal field and plasma current has been measured with a two-color IR camera capable of measuring on ELM timescales. For transport and turbulence studies, a new beam-emission spectroscopy (BES) diagnostic was installed and commissioned extending the wavelength range of turbulence diagnostics and complementing the existing high-k scattering diagnostic. The BES diagnostic has also provided the first measurements in H-mode plasmas of the amplitude and radial profile of TAEs during avalanches, complementing data from a new 16 channel reflectometer array.

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