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First results of NSTX-U SOL reflectometer[1] CORNWALL LAU, JOHN CAUGHMAN, Oak Ridge National Laboratory, JOEL HOSEA, RORY PERKINS, GARY TAYLOR, Princeton Plasma Physics Laboratory, JOHN WILGEN, Oak Ridge National Laboratory — The goal of the Oak Ridge National Laboratory (ORNL) scrape-off-layer (SOL) reflectometer is to measure the density profiles and fluctuations in front of the HHFW antenna on NSTX-U to help understand plasma-antenna coupling and RF-edge interactions, such as density profile modifications due to field-aligned power losses and/or parametric decay instabilities. Originally designed for NSTX parameters, the reflectometer has been upgraded to operate at the increased magnetic fields of NSTX-U by using a combination of O-mode cutoffs, and X-mode L and R cutoffs instead of only X-mode R-cutoff. The use of the X-mode L-cutoff, in particular, is necessary to achieve density profile measurements at the expected full magnetic field capability of NSTX-U. Reflectometer electronics and digitization systems were also upgraded to take measurements with a 20μs time resolution, so as to reduce the effects of turbulence on the density profile measurement. The first results of these reflectometry measurements on NSTX-U will be shown for a range of plasma conditions. Demonstration that the reflectometer can measure the different cutoffs will also be shown.

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