

Abstract Submitted  
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**Modeling impurity distribution in an ST tokamak using a transmission grating based diagnostic in the EUV range**<sup>1</sup> DEEPAK KUMAR, DAN STUTMAN, KEVIN TRITZ, MICHAEL FINKENTHAL, Department of Physics and Astronomy, The Johns Hopkins University, Baltimore, MD 21218, NSTX TEAM — A free standing transmission grating based imaging spectrometer is used to monitor impurity radiation emitted by the NSTX tokamak in the EUV range covering 30 – 700 Å (D. Kumar et. al., Rev. Sci. Instrum., in print). The spectrometer can successfully distinguish between the space distribution of the charge exchange radiation of C, O and N ions (localized to the beam interaction region), the edge emission from low Z elements and the core emission from high Z impurities, such as Cl. However, because of the mid plane toroidal view of plasma the spatial profiles of various lines are hard to interpret quantitatively. A geometric model based on the atomic data provided by ADAS is being developed to estimate the impurity spatial distribution. The spectrometer operates at a time resolution of  $\sim 400$  ms. An upgrade to a faster detection system is presently implemented and the corresponding results will also be shown.

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