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Spatially Resolved Measurements of NB Energetic Ion Distributions in NSTX[*] S. S. MEDLEY, R. ANDRE, A. L. ROQUEMORE, *Princeton U.* The mass and energy resolving superimposed E||B Neutral Particle Analyzer (NPA) on NSTX can be scanned over NPA sightline tangency radii from R_{tan} = +125 cm to R_{tan} = -75 cm on a shot-to-shot basis. This capability was used to measure the spatially resolved energy distribution Neutral Beam (NB) ions in both L-mode and H-mode discharges. In L-mode discharges, the NPA spectra exhibit classical slowing down and pitch angle scattering behavior in agreement with TRANSP code simulations. Also, the measured and TRANSP-calculated neutron emission rates are in good agreement. The same is true for H-mode discharges in which low n = 1-3, low frequency f < 50 kHz MHD tearing mode activity is absent. However, when MHD activity of this type is present in H-mode discharges, the NPA spectra exhibit a significant depletion of energetic ions that depends on time, energy and spatial location. Concurrently, the TRANSP-calculated neutron emission rate generally exceeds measurements by ~ 10-20%. TRANSP analysis of these observations using a model for anomalous energetic ion diffusion as a function of energy, space and time will be presented.

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