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Tangential multi-color "optical" soft X-ray array for electron temperature and transport measurements[1] L.F. DELGADO-APARICIO, D. STUTMAN, K. TRITZ, M. FINKENTHAL, The Johns Hopkins University, R. BELL, D. JOHNSON, R. KAITA, H. KUGEL, B. LEBLANC, L. ROQUEMORE, PPPL, THE JOHNS HOPKINS UNIVERSITY TEAM, PPPL TEAM — A multi-color "optical" soft X-ray array is being prototyped on NSTX for fast ($\leq$0.1 ms) measurements of the electron temperature profile, heat and particle transport, and MHD activity. Tests of a single-color array indicate that the optical device can have a signal-to-noise ratio superior to that of diode arrays. In addition, due to the compact nature of the diagnostic the plasma access is improved. We designed, built, and tested on NSTX, a tangential 48-channel "optical" soft X-ray array which views the same plasma volume at the mid-plane, in three different energy ranges determined by different SXR metallic foils. Depending on the electronics to be used, the diagnostic can have a time resolution ranging from a few μs to $\sim$0.1 ms, with spatial coverage from $0 \leq r \leq 1$. We plan to obtain space and time resolved electron temperature measurements for perturbative transport studies. Initial results from a range of operational regimes in NSTX will be presented.

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