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Current research activities and installation status of the X-ray imaging crystal spectrometer for KSTAR¹ S.G. LEE, J.G. BAK, National Fusion Research Institute, Korea, U.W. NAM, Korea Astronomy & Space Science Institute, M.K. MOON, J.K. CHEON, Korea Atomic Energy Research Institute, M. BITTER, K. HILL, Princeton University — An X-ray imaging crystal spectrometer (XICS) for KSTAR utilizing a four-segmented position-sensitive two dimensional (2D) multi-wire proportional counter and time-to-digital converter (TDC) based delay-line readout data acquisition system has been fabricated. The XICS provides spatially and temporally resolved measurements of the ion and electron temperatures, toroidal rotation velocity, impurity charge-state distributions, and ionization equilibrium. The four-segmented 2D detector with supporting electronics successfully demonstrated to improve the photon count-rate capability of the XICS system and a position resolution of the detector showed about 0.35 mm. A spectral resolution of the fabricated spectrometer has been measured using an X-ray tube before installation in the KSTAR tokamak. The current research activities and installation status of the spectrometer will be presented.

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