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MSE commissioning and other major diagnostic updates on KSTAR[1] JINSEOK KO, Natl Fusion Res Inst, KSTAR TEAM — The motional Stark effect (MSE) diagnostic based on the photoelastic-modulator (PEM) approach has been commissioned for the Korea Superconducting Tokamak Advanced Research (KSTAR). The 25-channel MSE system with the polarization-preserving front optics and precise tilt-tuning narrow bandpass filters provides the spatial resolution less than 1 cm in most of the plasma cross section and about 10 millisecond of time resolution. The polarization response curves with the daily Faraday rotation correction provides reliable pitch angle profiles for the KSTAR discharges with the MSE-optimized energy combination in the three-ion-source neutral beam injection. Some major diagnostic advances such as the poloidal charge exchange spectroscopy, the improved Thomson-scatting system, and the divertor infrared TV are reported as well.

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