

Abstract Submitted  
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**Magnetic field amplitude and pitch angle measurements using Spectral MSE on EAST**<sup>1</sup> KEN LIAO, WILLIAM ROWAN, IFS, University of Texas at Austin, JIA FU, YING-YING LI, BO LYU, ASIPP, Chinese Academy of Science, OLEKSANDR MARCHUK, Forschungszentrum Julich, YURI RALCHENKO, NIST — We have developed the Spectral Motional Stark Effect technique for measuring magnetic field amplitude and pitch angle on EAST. The experiments were conducted using the tangential co-injection heating beam at A port and Beam Emission Spectroscopy array at D port. A spatial calibration of the observation channels was conducted before the campaign. As a first check, the measured magnetic field amplitude was compared to prediction. Since the toroidal field is dominant, we recovered the expected  $1/R$  shape over the spatial range  $1.75 < R(\text{m}) < 2.32$  with  $R_0 = 1.89\text{m}$ . The objective is the spatially resolved pitch angle which follows from the ratio of the  $\pi$  and  $\sigma$  polarized Stark components. The excited state populations are far from local thermal equilibrium and a collisional-radiative model that takes into account the effect of the Lorentz field was used to predict the beam populations. The initial comparison is to an EFIT reconstruction. We are investigating sources of errors using a combination of simulations and calibrations arising from hardware non-idealities and approximations in the analysis. We are also investigating improvements in the EAST spectral MSE diagnostic.

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