

Abstract Submitted  
for the DPP17 Meeting of  
The American Physical Society

**Evaluation of MSE Wavelength-Interpolation Background Subtraction on KSTAR**<sup>1</sup> STEVEN SCOTT, PPPL, ROBERT MUMGAARD, MIT/PSFC, JINSEOK KO, NFRI — A ten-channel polychromator that simultaneously measures the Motional Stark Effect polarized pi and sigma line emission and two neighboring wavelengths near the MSE spectrum, previously used on Alcator C-Mod, has been integrated into the KSTAR MSE diagnostic. This system provides accurate measurements of the partially-polarized MSE background emission even when the background varies rapidly in time and space. Data acquired during the 2017 KSTAR campaign and data-mining of older data will be used to assess four key issues: (1) what error in measured pitch angle is introduced by not compensating the MSE measurement for the presence of partially-polarized background light (the practice now); (2) how much larger will this error grow when KSTAR realizes higher-performance plasmas, particularly higher density; (3) how accurately can the background polychromator system estimate the polarized background light during beam injection; and (4) what is the relative statistical measurement error between the existing NFRI MSE diagnostic versus the background polychromator system? The answers to these questions will inform a decision in late FY17 about whether to proceed with construction of 15 additional background polychromator channels for installation on KSTAR before the start of its FY18 run campaign.

<sup>1</sup>This work supported by DoE contract No. DE-AC02-09CH11466.

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Date submitted: 24 Aug 2017

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