

**Abstract Submitted for the Forty-Ninth Annual Meeting  
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Theory     Experiment

**First Current and Radial Electric Field Profile Measurements using the Full Co- Plus Counter-Beam Motional Stark Effect Diagnostic on DIII-D,\*** C.T. Holcomb, M.A. Makowski, S.L. Allen, W.H. Meyer, *LLNL* – The motional Stark effect (MSE) diagnostic on DIII-D has been expanded to include 24 additional channels viewing a neutral beam injected counter to the direction of the beam viewed by the existing MSE system. Using data collected from a variety of discharge types, we compare current and  $E_r$  profiles determined using only the co-beam MSE channels with the same using co- plus counter-beam MSE channels. This comparison is meant to evaluate how well the improved spatial resolution and reduced  $B_z$  and  $E_r$  uncertainty in the new channels improve the accuracy of the reconstructed equilibrium. Special attention is paid to discharges designed to have high beta and bootstrap fraction. The expanded system is also capable of providing a direct measurement of  $E_r$  without relying on EFIT reconstruction. These measurements are presented and compared with those derived using the charge exchange recombination diagnostic.

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