

Abstract Submitted
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Beam-Ion Profile Diagnostic Using 3 MeV Protons¹

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Calculations based on classical beam-ion confinement often overestimate the measured pressure profile and neutron rate, particularly in DIII-D Advanced Tokamak plasmas with beam-driven Alfvén activity. In these discharges with plasma currents of ~ 1 MA, a significant fraction of the charged d-d fusion reaction products are unconfined, affording the opportunity to infer the d-d reaction profile from measurements of 3-MeV protons that are lost on their first orbit. In contrast to earlier studies,² the advent of accurate poloidal field reconstructions based on Motional Stark Effect measurements simplifies the design requirements for a useful diagnostic. Sensitivity studies and a preliminary design are presented.

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²W.W. Heidbrink and J.D. Strachan, Rev. Sci. Instrum. **56** (1985) 501.

☐ Prefer Oral Session
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Special instructions: Poster 29, Stability, MHD, Current Drive, Advanced Tokamak
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