

Abstract Submitted
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**Poloidal Magnetic Field Measurements and Analysis
With the DIII-D LIBEAM System¹**

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— On DIII-D the LIBEAM diagnostic has been designed to provide
precise measurements of the local poloidal magnetic field in the edge
region, an important parameter for understanding the stability of high
performance tokamaks. We use the Zeeman splitting and polarization
characteristics of the collisionally excited 670.8 nm Li resonance line to
interpret magnetic field components viewed using a dense ($\Delta R \sim 5$ mm)
array of 32 viewchords. Narrowband etalons and interference filters are
used to isolate one of the 3 Zeeman components, and the polarization
state is recovered using a photo-elastic modulator along with a PC-
based, multichannel digital lock-in detection system. Edge magnetic
pitch angle profiles ($0.78 < \Psi_N < 1.05$) for a variety of DIII-D shots
during the 2002 campaign have been reconstructed using several chords
and an analysis of the lock-in and dc signal levels. Measurement ac-
curacy is presently limited by etalon performance which leads to a de-
creased polarization fraction. Analysis of this effect and some strategies
for absolutely calibrating the measured polarization will be presented.

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