

Equilibrium reconstruction of plasma profiles based on soft x-ray imaging in DIII-D

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Abstract

The method of using internal magnetic surface information from soft X-ray measurements to facilitate equilibrium reconstruction is explored. It is shown that useful information about the shape of the safety-factor q profile in DIII-D can be generally determined from the information inferred from surfaces of constant soft X-ray emissivity. Comparisons of magnetic surfaces and the q profile reconstructed using external magnetic and SXR data against those using magnetic and Motional Stark Effect (MSE) data are presented. The reconstructed results using SXR and are found to reasonably agree with those derived from MSE. The choice of an appropriate number of fitting parameter to reconstruct the q profile is also investigated.

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