

Abstract Submitted
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Characterization of magnetic field profiles at RFX-mod by Faraday rotation measurements FULVIO AURIEMMA, Consorzio RFX, Padova Italy, MATTEO BROMBIN, Department of Electrical Engineering, Padova, Italy, ALESSANDRA CANTON, LEONARDO GIUDICOTTI, PAOLO INNOCENTE, ENRICO ZILLI, Consorzio RFX, Padova Italy — A multichannel far-infrared (FIR, $\lambda=118.8 \mu\text{m}$) polarimeter has been recently upgraded and re-installed on RFX-mod to measure the Faraday rotation angle along five vertical chords. Polarimetric data, associated with electron density profile, allow the reconstruction of the poloidal magnetic field profile. In this work the setup of the diagnostic is presented and the first Faraday rotation measurements are analyzed. The measurements have been performed at plasma current above 1.2 MA and electron density between 2 and $6 \times 10^{19} \text{ m}^{-3}$. The actual S/N ratio is slightly lower than the expected one, due to electromagnetic coupling of the detectors with the saddle coils close to the polarimeter position. Due to this limit, only average information in the flat-top phase of the discharge could be so far obtained. The experimental data have been compared with the result of the μ &p equilibrium model [1], showing a good agreement between experiment and model, whereas the main differences are in the external region of the plasma. A different parameterization of the $\mu = \mu_0 \mathbf{J} \cdot \mathbf{B} / B^2$ profile has been proposed to enhance the agreement between model and experiment.
[1] Ortolani and Snack, World Scientific (1993) Singapore

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