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Kinetic Spectra of the Planar Multipole Resonance Probe¹

MICHAEL FRIEDRICHS, Institute of Product and Process Innovation, Leuphana University, JENS OBERRATH, Institute of Product and Process Innovation, Leuphana University Lneburg, Germany — The planar multipole resonance probe is suitable for industrial plasma diagnostic purposes and consists of two half-disc electrodes, which can be integrated into the chamber wall of the reactor. Due to its minimal invasive character, inner plasma parameters can be monitored during the process. Based on a fluid model it is possible to determine the electron density from a detected resonance frequency in the measured spectrum. However, to monitor also the electron temperature an additional resonance parameter, e.g. the half-width of the resonance peak, is necessary. It is strongly influenced by kinetic effects, therefore a study of a kinetic model to obtain a relation between the half-width and the electron temperature is required. In this work such a kinetic model based on functional analytic methods and first spectra are presented.

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