

Abstract Submitted  
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**Active Plasma Resonance Spectroscopy: Evaluation of a fluiddynamic-model of the planar multipole resonance probe using functional analytic methods** MICHAEL FRIEDRICHS, Institute of Product and Process Innovation, Leuphana University Lneburg, RALF PETER BRINKMANN, Institute of Theoretical Electrical Engineering, Ruhr-University Bochum,, JENS OBERRATH, Institute of Product and Process Innovation, Leuphana University Lneburg — Measuring plasma parameters, e.g. electron density and electron temperature, is an important procedure to verify the stability and behavior of a plasma process. For this purpose the multipole resonance probe (MRP) represents a satisfying solution to measure the electron density. However the influence of the probe on the plasma through its physical presence makes it unattractive for some processes in industrial application. A solution to combine the benefits of the spherical MRP with the ability to integrate the probe into the plasma reactor is introduced by the planar model of the MRP. By coupling the model of the cold plasma with the maxwell equations for electrostatics an analytical model for the admittance of the plasma is derivated[1 , 2], adjusted to cylindrical geometry and solved analytically for the planar MRP using functional analytic methods. [1]: M. Lapke et al. , Plasma Sources Sci. Technol. 22 (2013) 025005 (8pp) [2]: J. Oberrath, R.P. Brinkmann, Plasma Sources Sci. Technol. 23 (2014) 065025 (10pp)

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