

Abstract Submitted  
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**Influence of kinetic effects on the resonance behavior of the Multipole Resonance Probe**<sup>1</sup> JENS OBERRATH, THOMAS MUSSENBROCK, RALF PETER BRINKMANN, Theoretical Electrical Engineering, Ruhr University Bochum — Active plasma resonance spectroscopy is a well known diagnostic method. Many concepts of this method are theoretically investigated and realized as a diagnostic tool. One of these tools is the multipole resonance probe (MRP) [1]. The application of such a probe in plasmas with pressures of only a few Pa raises the question whether kinetic effects have to be taken into account or not. To address this question a kinetic model is necessary. A general kinetic model for an electrostatic concept of active plasma resonance spectroscopy has already been presented by the authors [2]. This model can be used to describe the dynamical behavior of the MRP, which is interpretable as a special case of the general model. Neglecting electron-neutral collisions, this model can be solved analytically. Based on this solution we derive an approximated expression for the admittance of the system to investigate the influence of kinetic effects on the resonance behavior of the MRP.

[1] M. Lapke et al., Plasma Sources Sci. Technol. 20, 2011, 042001

[2] J. Oberrath et al., Proceedings of the 30th International Conference on Phenomena in Ionized Gases, 28th August - 2nd September, 2011

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