

Abstract Submitted
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Space and time resolved density measurements in reactive plasmas with the plasma absorption probe¹ MARC BOEKE, CARSTEN SELLE, JOERG WINTER, Ruhr-University Bochum, Institute for Experimental Physics II, Germany — The plasma absorption probe (PAP) is an efficient tool for the determination of electron densities, especially in reactive plasmas. The detection principle of the probe is based on active resonance spectroscopy. Active resonance spectroscopy is a method applied by many precedent researchers and used at present in diverse applications. The lack of adequate calibration constants and the occurrence of multiple absorption signals were two major drawbacks of the PAP, which are successfully overcome in this work. Design variations are tested by numerical computation and the model-based achievements are established in experiment. This redesigned PAP is optimized for the easy determination of electron densities. A dielectric cover protects the probe against the influences in reactive plasmas. Therefore, it withstands conditions where other probes are easily damageable. Space resolved measurements to achieve density profiles are easily possible. Also time-varying electron densities, for example in pulsed (dusty) plasma discharges have been measured. At present, a time resolution is achieved by 5 microseconds.

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Marc Boeke
Ruhr-University Bochum, Institute for Experimental Physics II, Germany

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