Abstract Submitted
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Fractional pressure measurements inside of the divertor baffling at W7-X with a spectroscopically assisted Penning gauge[1] THIERRY KREMEYER, OLIVER SCHMITZ, Univ of Wisconsin, Madison, UWE WENZEL, Max Planck Institut fuer Plasmaphysik, Greifswald, KURT FLESCH, Univ of Wisconsin, Madison, W7-X TEAM — Studies of helium exhaust from stellarator divertors is important to qualify sufficient helium exhaust for future reactors. Penning gauges assisted by spectroscopy were used to measure total neutral pressure and to resolve the D and He partial pressures [T. Denner et al. RSI 67 (1996) 3515]. A generic feasibility test at W7-X gave successful measurements of the total as well as the fractional neutral pressures of He and H. A first prototype of a new Penning gauge probe head has been tested at UW Madison at 240 mT as well as at the PAX magnet at IPP Greifswald, Germany at 3 T and shows a near linear power law scaling between current and pressure: I = $C * P^n$ with n = 1.0 - 1.2 for the 240 mT case and 2.3 - 2.8 for the 3 T case. Pressure measurements were achieved starting at 10-2 mbar and down to 10-6 mbar. With the new probe head, it was possible to increase the time resolution of the spectroscopically assisted fractional neutral pressure measurements to up to 1MHz. This system is now implemented at three poloidal positions at one toroidal location in W7-X and is ready for measurements.

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