Abstract Submitted
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First flux surface measurements on W7-X THOMAS SUNN PEDERSEN, MATTHIAS OTTE, CHRISTOPH BIEDERMANN, SERGEY BOZHENKOV, TORSTEN BRAEUER, Max Planck Institute for Plasma Physics, SAMUEL LAZERSON, Princeton Plasma Physics Lab, W7-X TEAM — Wendelstein 7-X [1] is rapidly approaching first plasma operation. The full operational B-field of 2.5 T has been reached using the 70 superconducting coils. The first flux surface measurements have recently been successfully performed. This talk will describe the W7-X flux surface measurement system [2], and show and analyze the first results from this diagnostic, which, at the time of writing this abstract, can be summarized as follows: Confirmation of the existence of nested, closed flux surfaces, first measurements of iota, and detection of the expected internal 5/6 island chain of the OP1.1 configuration. The data obtained so far agree with expectations, and provide a first confirmation of the accuracy of the coil geometry and assembly, as well as diagnostic installation [3]. They also confirm that, with respect to the magnetic topology, plasma operation can start. Plans for, and potentially first results of, measurements of any remnant field errors, will be reported separately at this meeting [4].

[1] H.-S. Bosch et al., Nucl. Fusion 53, 126001 (2013).
[2] H.-S. Bosch et al., IEEE transactions on plasma science, 42(3), (2014)
[3] T. Braeuer et al., submitted to IEEE Transactions on Plasma Science
[4] S. A. Lazerson et

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