

Abstract Submitted
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MIB Probes for measurements of particle and energy fluxes in plasma of Wendelstein 7-X V.I. DEMIDOV, WVU, SPbGU, M.E. KOEPKE, WVU, I.P. KURLYANDSKAYA, SPbU SFS EMERCOM RF, Y. RAITSES, PPPL — Magnetically insulated baffled (MIB) probes and probe arrays that share the simplicity of simple Langmuir probes but supersede them in their ability to make real-time measurements of plasma potential, temperature and energy/particle fluxes in W7-X stellarator plasma are being developed. The probes offer the advantages of direct measurements of the plasma fluid observables, while being non-emitting and electrically floating. The principle of operation of the probe is based on the dependence of the voltage drop in the plasma-probe sheath on the direction of the local magnetic field. The core technology for these probes rests with the use of a special baffling configuration such that electron current to the probe is fully controllable in the closed, open or partially open orientation, by a simple rotation of the baffle with respect to the magnetic field alignment in the plasma. The baffled-probe designs proposed for edge diagnostics will increase the capability to characterize separately plasma properties in real-time for understanding of underlying physics in the edge plasma.

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