

Abstract Submitted
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Internal magnetic measurements in SSPX using insertable probes¹ C.A. ROMERO-TALAMAS, SSPX TEAM — Shortly after plasma breakdown at the Sustained Spheromak Physics Experiment (SSPX) a central column forms (aligned with the chamber axis), but impulsively bends and disappears seemingly merging around the chamber axis. This short lived central column is not well understood and is conjectured to be important in building helicity and forming closed magnetic flux surfaces. High-speed images of the transient central column have helped study its size and behavior in time, but do not provide details of the B field. For this reason, a multielement magnetic probe is being built to investigate the shape and magnitude of the field during spheromak formation and, in general, throughout a plasma shot. The design is based on a probe currently in use at the Caltech Spheromak Experiment [C.A. Romero-Talamas, P.M. Bellan, S.C. Hsu, Rev. Sci. Instrum. 75, 2664 (2004)] and consists of chip inductors arranged in 25 separate clusters to measure the three components of the field along a linear array that spans the entire radius of the SSPX chamber. The probe is designed to be removable between shots without perturbing the chamber's vacuum. The probe design, installation and operation challenges, as well as preliminary findings, are presented.

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