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Preliminary Studies of Sheared Flows in the Auburn Linear Experiment for Instability Studies (ALEXIS) using a Mach probe[1] MICHAEL TAYLOR, JON JACKSON, ASHLEY EADON, EDWARD THOMAS, Auburn University — Sheared flows are an important mechanism for understanding plasma stability in systems ranging from fusion plasmas to the space plasma environment. In the ALEXIS (Auburn Linear Experiment for Instability Studies) device, a Mach probe was designed and fabricated in order to study these sheared flows. The Mach probe consists of two parallel collection plates electrically separated by a ceramic insulator. The collection plates are negatively biased into ion saturation mode. The ratio of the currents through the probe's plates can be used to determine the velocity of the ions through the plasma. A calibration procedure was developed to ensure the proper operation of the probe at different locations in plasma column. The plasma column was scanned at various radial positions and measurements of spatially varying flows have been made. The initial measurements of the flow velocities in ALEXIS and the design of the Mach probe will be discussed in this presentation.

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