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Overview of progress on the Liquid Metal Experiment J. RHOADS, PPPL, A. ARTHURS, Harvard University, E. EDLUND, P. SLOBODA, E. SPENCE, H. JI, PPPL — A flowing liquid wall is an attractive plasma facing component in fusion devices due to the ability to withstand high heat and neutron fluxes. The Liquid Metal Experiment (LMX) consists of externally driven, free-surface flow through a wide-aspect ratio channel subjected to a strong magnetic field orthogonal to the surface of the flow; similar to the scenario of a toroidally flowing divertor. LMX has been modified to study heat transfer in addition to measuring fluctuations of the surface and mapping the velocity profile in open channel flow. A high-wattage resistive heater and an infrared camera have been installed to observe the effect of a magnetic field on heat transfer. Two position-sensitive diodes are in place to make measurements of the fluctuations of the surface, which can be correlated to underlying turbulent structures and track changes in the k-spectra. Also, an array of potential probes has been implemented in order to map the flow profile as the magnetic field is increased. All of these phenomena must be studied in order to determine how a flowing liquid divertor would respond in a reactor setting. An overview of the modifications and preliminary results will be presented.

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