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Flow Measurement of Liquid Metal Flow in Spallation Target Model of ADS by using Ultrasound. HIRONARI OBAYASHI, KENJI KIKUCHI, Japan Atomic Energy Agency — Measurement of Lead Bismuth Eutectic (LBE) flow by Ultrasonic Velocity Profiler (UVP) technique was successfully realized in the mockup loop of shield annular tube type spallation target, JLBL-2 (JAEA Lead-Bismuth Loop-2), for Accelerator Driven System (ADS) target test facility in J-PARC (Japan Proton Accelerator Research Complex). UVP is a powerful tool to measure an instantaneous space-time velocity profile especially on a velocity measurement of an opaque liquid flow, such as liquid metal. However, it has not yet been done well because both of its poor wetting property with stainless steel and of the difficulty in manufacturing probe at high temperature. At lower temperature, wetting of LBE to stainless steel that is a material of target loop is too poor. Therefore, the surface of the test section was treated by polishing, flatting and finally coating with nickel and solder. And we performed velocity measurement along the centerline of the loop and confirmed basic performance of the loop. It was found that there were periodical releases of eddy from the re-circulation region formed near the wall surface of the inner cylinder. We made then a measurement for non-parallel directions with the centerline and observed 3-dimensional structure of LBE flow configuration.

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