

Abstract Submitted  
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**Plasma Flow Measurement via Laser-Induced Fluorescence and Mach Probe in Weakly Magnetized Plasmas** HYUN-JONG WOO, Center for Edge Plasma Science, Hanyang University, KYU-SUN CHUNG, Dept. of Electrical Engineering, Hanyang University, MYOUNG-JAE LEE, Dept. of Physics, Hanyang University, TAIHYEOP LHO, Convergence Plasma Research Center, National Fusion Research Institute — Although several un-magnetized Mach probe theories are available, they have not been completely calibrated and should be checked by comparative (or simultaneous) measurement with another diagnostic tools such as laser-induced fluorescence or optical emission spectroscopy. Most of the previous calibrations have been done in the low Mach number (say, less than 0.5), where the existing theories predict the very similar numbers, so that the validity of the calibration is still in doubt. In this work, the plasma flow velocity is measured via MP and laser-induced fluorescence in weakly magnetized Ar plasma in Diversified Plasma Simulator-II (DiPS-II). For meaningful comparison of MP and LIF, One increases the plasma flow velocity up to  $0.5C_s$ , where  $C_s$  is the ion sound velocity. Although magnetic field are applied in plasma, the ion gyro-radius is still less than the probe radius. Hence, the MP results is analyzed by un-magnetized probe theories and these are compared to LIF results.

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