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Laser-based measurement of 3-dimensional dust trajectory in plasma KIL-BYOUNG CHAI, WONHO CHOE, Korea Advanced Institute of Science and Technology, KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY TEAM — Dusts, produced by plasma-wall interactions or gas phase chemical reactions in various plasmas including tokamak plasmas and processing plasmas, brings about many negative concerns in the operational and safety aspects [1]. Therefore, many efforts on developing dust diagnostics and control/removal techniques of dusts from the plasma environments have been made during the last decade [2,3]. Among various dust diagnostics adopted in plasma experiments, the laser based diagnostics are attractive because they are non-intrusive and time-resolved in-situ. In this study, a laser diagnostic technique for 3-dimensional dust trajectory by utilizing two video cameras and a sheet laser beam with a multiple beam pass method is presented, which results in improved sensitivity than previously developed methods. In addition, 3-dimensional dust trajectories are measured with different neutral drag and thermophoresis varied by neutral gas flow rates and neutral temperature gradient, respectively.

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