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Time Resolution of Electron Density Measurement using Mach Zehnder Interferometer in Arc Discharge Plasma TAKAFUMI YAMADA, MAKOTO MATSUI, Shizuoka Univ — Sample return mission from Jupiter Trojans is proposed for future mission in JAXA. Reentry velocity in this mission is estimated at 14 kilometers per second. Although an accurate estimation of radiation heating is required when reentry velocity is very high, it is reported that there is discrepancy between predicts and experimental results. Precursor photoionization is considered as the causation of it, and measurement of electron density over ahead of strong shock waves to behind of is acquired for figuring out this discrepancy. In this study, the goal is construction of Mach-Zehnder interferometer which is applicable to hyper velocity shock waves and is acquirable to electron density distribution in them. First, a plasma source has been developed for a measuring object. In addition, the interferometer will be applied to measure electron density.

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