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Resolution Improvement of Electrostatic Ion Analyzer Using Additional Slit for Laser Ion Source

A laser ion source provides an ion beam extracted from a plasma produced by irradiating a high power laser on a solid target. The ion species contained in the plasma are analyzed with an electrostatic ion analyzer. In order to distinguish the ions, the spectral width of ion signals in the mass spectrum has to be smaller than the difference of time-of-flight between the different ion species and charge-states. Therefore a high resolution is required for analyzing ion species which have similar charge-to-mass ratio. In this study, we investigated an analyzer structure for reducing the spectral width to improve the resolution of the analyzer. The results indicated that the resolution of the analyzer can be improved by adding a slit to the analyzer.

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