論文 / 著書情報
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題目(和文)	良く制御されたイオン源のためのレーザーアブレーションプラズマの縦磁場によるガイド
Title(English)	Guiding of laser ablation plasma by axial magnetic field for a well-controlled ion source
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種別(和文)	要約
Type(English)	Outline

Outline

Control of laser ablation plasma by an axial magnetic field is a key technique to develop a high current and low emittance ion source. Typically, the interaction process between plasma and magnetic field is characterized by the magnetic Reynolds number R_m. The thesis pointed out that, in case of the high current ion source utilizing a laser ablation plasma, R_m is always around 1 in the interaction region. Therefore, both the convective and diffusive effects of magnetic field play some roles in the controlling process. In addition, the plasma velocity, the temperature, and the density vary within the plasma plume. Those facts complicate the problem. To make the interaction process and the guiding mechanism clear for development of a well-controlled ion source, we investigated the behavior of the ablation plasma through an axial magnetic field and the response of the field experimentally. Then the correlation of the behaviors and the guiding mechanism were discussed. Finally, we proposed and demonstrated two ways to guide the plasma more effectively from the viewpoint of ion source based on the findings.