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Effect of Solenoidal Magnetic Field on Moving Plasma Used in Laser Ion Source

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In typical configuration of laser ion source, there is a drift section where plasma moves from a laser target to an extraction electrode with extending its volume. The density of the plasma decreases to the extent that ion beam can be extracted. At the section, solenoidal magnetic field is useful to guide the plasma and inject more particles into the electrode than without external field. To guide the plasma efficiently, we investigate the effect of the magnetic field on the plasma and vice versa. We measure the change of the plasma flux and magnetic field in the solenoid and discuss the interaction of them from the point of plasma guiding.

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