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Generation of Coherent Structures in Overdense Plasma using Intense Laser pulse DEVSHREE MANDAL, AYUSHI VASHISTHA, Institute For Plasma Research, AMITA DAS, Indian Institute of Technology, Delhi, India —
Coupling laser energy with plasma is of great interest in context of ICF, hot electron generation, ion acceleration etc. With advancement in laser pulse technology where intensity goes as high as $10^{21} W/cm^2$, high electromagnetic fields of laser can bring out non-linear response of plasma in couple of femto-seconds of interaction. Therefore, a comprehensive analysis of plasma behaviour in that time scale becomes crucial. In this study, we demonstrate the spontaneous generation of magnetic vortices which get formed after intense laser pulse has interacted with an overdense plasma. We observe that these structures entrap EM fields in them and can propagate in the denser regions of plasma. We present a detailed study on these coherent structures and how their characteristic features makes them possible candidate for energy transport.

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