

Experimental investigations on space and astrophysical phenomena with intense lasers

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We have been working on model experiments of space and astrophysical phenomena, such as collisionless shocks, magnetic reconnections, and particle acceleration, using high power lasers. In laboratories, one can access the global structures of phenomena and the local information of plasmas in a controlled manner, and thus, the laboratory experiments can be a complementary tool to investigate space and astrophysical phenomena. We report our recent progress on collisionless shocks and particle acceleration in laser experiments together with the relevant numerical experiments.