

Extreme Light-matter interactions toward unexplored nature

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Extreme physical conditions expressed by ultrahigh pressure and ultrahigh temperature, which can be easily investigated in astronomical phenomena, could be rarely realized in the laboratory. It was the CPA (Chirped Pulse Amplification) technology of Dr. Mourou and Dr. Strickland who won Nobel prize in Physics 2018 that makes it possible to actively research phenomena in extreme physical conditions by realizing strong laser and matter interactions in laboratories. In this colloquium, the author is to review basic physical principles happened in such strong light and matter interactions, named relativistic optics or relativistic plasma and to discuss its perspective.