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Stopping and Coulomb explosion of energetic carbon clusters in a plasma irradiated by an intense laser field[1] GUIQIU WANG, Dalian Maritime University, YOUNIAN WANG, Dalian University of Technology — The interaction of a charged particle beam with a plasma is a very important subject of relevance for many fields of physics, such as inertial confinement fusion (ICF) driven by ion or electron beams, high energy density physics, and related astrophysical problems. Recently, a promising ICF scheme has been proposed, in which the plasma target is irradiated simultaneously by intense laser and ion beams. For molecular ion or cluster, slowing down process will company the Coulomb explosion phenomenon. In this paper, we present a study of the effects of intense radiation field (RF) on the interaction of energetic carbon clusters in a plasma. The emphasis is laid on the dynamic polarization and correlation effects of the constituent ions within the cluster in order to disclose the role of the vicinage effects on the Coulomb explosion and energy deposition of the clusters in plasma. On the other hand, affecting of a strong laser field on the cluster propagating in plasma is considered, the influence of a large range of laser parameters and plasma parameters on the Coulomb explosion and stopping power are discussed.

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