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Intense laser-driven electrostatic shocks and its acceleration of ions in overdense plasmas QUANLI DONG, MINQING HE, ZHENGMING SHENG, YUTONG LI, JIE ZHANG, High Energy Density Physics Group, Institute of Physics, CAS — The formation and propagation of the electrostatic shocks in overdense plasmas irradiated by intense ultrashort laser pulses is studied with particle-in-cell simulations. The dependence of the initial shock speeds on the parameters of the plasma and the laser is explained by invoking the modified momentum conservation model with 2D effects taken into account. The details of the acceleration process of ions by the shocks are also investigated. Such topic is believed as an important issue in the fast ignition scheme of the inertial confinement fusion researches.

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