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Hot electron generation in the ultra-intense laser matter interaction at a steep interface ROHINI MISHRA, YASUHIKO SENTOKU, University of Nevada, Reno, ANDREAS KEMP, Lawrence Livermore National Laboratory — The absorption of ultra-intense laser light in the step-like densities, highly overdense plasma is discussed. To understand absorption physics we performed one-dimensional collisional particle simulation (PICLS1D). These simulations are able to simulate hot electrons generation in the laser plasma interaction, and energy transport thorough the cold resistive plasma. For a high intensity normal incident laser light the absorption is mainly due to JXB absorption. We observed the electrons are trapped in the interaction region by the electrostatic potential, and the JXB force drives the high energy electrons inwards from the trapped region with the frequency 2ω. Except these 2ω electron jets there are also large number of leaking electrons with lesser energy and with the frequency 3ω, 6ω. When we increase the target density, the JXB electron jets start to disappear resulting in to the decrease of total absorption. The physics inhibiting the production of 2ω frequency electrons is discussed. Together with this we have simulated the effects of preplasma, specifically the increased total absorption which leads the production of higher energy electrons.

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