

Seminar

der GSI, der TU Darmstadt und der Universitäten Frankfurt, Mainz und Gießen zur

Physik dichter Plasmen mit Schwerionen- und Laserstrahlen

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Laser driven ion wave breaking acceleration in plasma

With the high-power laser technology development, laser driven plasma based ion acceleration has attracted much attention. In order to accelerate ions in plasma by ultra-intense laser pulses, one way is to push electrons by the laser ponderomotive force, then the charge separated electrostatic field drags ions. However, as ions are the background and very heavy, if too much ions are dragged, the laser pulse propagating velocity will be slowed down dramatically. This limits the final ion energy. In order to accelerate ions to high energy, it is necessary to try to accelerate 'just enough' ions. Various regimes with different target configurations have been proposed. In this talk we show that this 'just enough' ion acceleration can happen automatically in near-critical density relativistic transparency plasma via ion wave breaking.