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Role of two beam instabilities in additional particle acceleration in 3D reconnecting current sheet

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Additional particle acceleration on plasma turbulence induced by the two accelerated beams of the same charge and different energies is investigated in a 3D reconnecting current sheet (RCS) for different magnetic field topologies and reconnection rates. Electrons are found to be accelerated rather close to the X-nullpoint by Buneman instability and gain the additional energy being a few factors of their energy obtained at the primary acceleration by a super-Dreicer drifted electric field (DEF). Protons are subject to ion-sound instabilities occurring much further from the X-nullpoint. We compare energy spectra of particle beams for different magnitudes of turbulent electric field being higher, equal or lower than the super-Dreicer DEF.