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PS2-13: Microbunched Beam as a Source of Monochromatic X-Rays

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The problem of coherent radiation from microbunched FEL beam passing through the plasma and interacting with laser beat waves (LBW) is considered. The interaction of plasma with LBW generates harmonic modulation of longitudinal density with increasing amplitude and also longitudinal periodic electric field. Therefore, the beam electrons are influenced by the inhomogeneity of the medium and by the periodic electric field. As a result, the formed radiation has properties of the both transition and undulator radiations (hybrid radiation). The interaction of microbunched electron beam with the modulated plasma leads to the formation of partially coherent radiation. The intensity of the hybrid coherent radiation essentially exceeds the intensities for the other types of coherent radiation and can be comparable or greater than the intensity in FEL.

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