

High Energy Gamma-ray Emission from Merging Clusters of Galaxies

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High energy γ -ray emissions attributed to merger of clusters of galaxies are investigated. We study time evolution of relativistic particles under 3-D hydrodynamic simulation for the merger. The relativistic particles are assumed to be produced by shock acceleration around the shock fronts induced by merging. As a result, we obtain light curve, energy spectrum and spatial distribution of high energy γ -ray emission from inverse-Compton, bremsstrahlung and pion decay processes via such particles. We find that the higher energy emissions of each process are suppressed in the late stage of merging due to cooling by 2.7 K cosmic background radiation, and that emission is spread over \sim Mpc.