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Two anomalous components of gamma-rays from GRB 221009A

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GRB 221009A was a remarkable gamma-ray burst; it is sometimes referred to as “the brightest of all time” (BOAT). In this talk we consider two peculiar components of observable gamma-rays from GRB 221009A: 1) a high energy “echo” of the GRB prompt emission phase produced by neutrons from photohadronic interactions inside the fireball with subsequent interaction of these neutrons with the material of the star forming region (SFR) and 2) external Compton (EC) radiation due to the scattering of the accelerated electrons on the radiation reflected from the SFR material. We show that both components are potentially observable. In addition, we discuss the shape of the primary (intrinsic) gamma-ray spectrum of GRB 221009A and the nature of the 300 TeV gamma-ray-like event detected by the Carpet-3 array in temporal and angular coincidence with GRB 221009A. Some details are available in astro-ph/2604.10378.

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