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Abstracts

Explosive Phenomena at Black Hole Horizon

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The processes near small black hole horizon are considered. It is shown that for black holes with masses below 10^{20} gramm infalling protons are efficiently transformed into positrons. The possibility to explain the observed 0.511 MeV via such mechanism is discussed.

Another process of atom destruction near horizon is also discussed.

Particle Production in Modified gravitational Baryogenesis and High Energy Cosmic Rays

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We consider the scenario of gravitational baryogenesis modified by an addition of R^2 -term into the action of the model. This modification allows to eliminate cosmological instability inherent to the canonical version of gravitational baryogenesis. In the considered model the exponential rise of curvature turns into high frequency oscillations, which in turn lead to production of superheavy dark matter particles. Slow decays of these particles via virtual black holes could contribute to the flux of high energy cosmic rays.