

From PAMELA mission to GAMMA 400 project – The indirect search for signatures of dark matter

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In 2008 the PAMELA magnetic spectrometer has discovered unpredicted abundance of the ratio of the galactic positron flux to the total positrons and electrons flux at high energies. It does not agree with the cosmic rays fluxes calculated using GALPROP routine. This abundance was called the “anomalous effect PAMELA” and one of the explanations of this effect was the appearance of the additional electrons and positrons flux due to annihilation or decay of the dark matter particles. Later the anomalous effect PAMELA was confirmed by the gamma-telescope Fermi/LAT and by the AMS-02 magnetic spectrometer. Now the new project GAMMA-400 has been preparing. The one of its main goals is a search for signatures of dark matter particles annihilation or decay producing gamma rays. The GAMMA-400 gamma-telescope will have better angular and energy resolutions and will be the next stage of the space gamma-telescopes development. At the present time the problem of the dark matter nature still remains the main challenge in high energy cosmo- and astrophysics.

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