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Antiparticle Detection in Space for Dark Matter Search: the PAMELA Experiment

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Data on antiproton, proton, positron, electron cosmic rays between tens MeV and hundreds GeV have been obtained in four years in flight by the PAMELA experiment. The results have been theoretically studied in an extensive way as dark matter annihilation signals, as well as pulsar contributions and new mechanisms of acceleration and propagation of cosmic rays in the Galaxy. The instrument PAMELA, in orbit since June 15th 2006 on board the Russian satellite Resurs DK1, is daily delivering to ground 16 Gigabytes of data. A combination of a magnetic spectrometer and different detectors allows particles and antiparticles to be reliably identified.

New data collected by PAMELA, including light nuclei, will be presented with an overview of the main trends in the theoretical interpretation of the results.

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