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Understanding the Origin of Cosmic-Ray Positrons

The positron flux measured by the AMS exhibits complex energy dependence. In the entire energy range the positron flux is well described by the sum of a power-law term associated with the positrons produced in the collision of cosmic rays, which dominates at low energies, and a new source term of positrons, which dominates at high energies. This new source has a finite energy cutoff, which is established with a significance of $\sim 5\sigma$. These experimental data on cosmic ray positrons show that, at high energies, they predominantly originate either from dark matter annihilation or from a new astrophysical source.

Collaboration(s)

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