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Antiproton Flux and Antiproton-to-Proton Flux Ratio in Primary Cosmic Rays Measured with AMS on the Space Station

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Precision measurements by AMS of the antiproton flux and the antiproton-to-proton flux ratio in primary cosmic rays in the absolute rigidity range from 1 to 450 GV are presented based on 3.49×10^5 antiproton events and 2.42×10^9 proton events. At 20 GV the antiproton-to-proton flux ratio reaches a maximum. Unexpectedly, above 60 GV the antiproton spectral index is consistent with the proton spectral index and the antiproton-to-proton flux ratio shows no rigidity dependence in the rigidity range from 60 to 500 GV. This unexpected observation requires new explanation of the origin of cosmic ray antiprotons.

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