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Can we explain AMS-02 antiproton and positron excesses simultaneously?

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I explain the excess of the antiproton fraction recently reported by the AMS-02 experiment by considering collisions between cosmic-ray protons accelerated by a local supernova remnant (SNR) and the surrounding dense cloud. The same "pp collisions" provide the right branching fraction to fit the observed positron excess simultaneously without a fine tuning. The supernova happened in relatively lower metalicity than the majorcosmic-ray sources. The cutoff energy of electrons marks the supernova age of ˜10ˆ5 years, while the antiproton excess may extend to higher energy. Both antiproton and positron fluxes are completely consistent with our predictions in Fujita, Kohri, Yamazaki and Ioka (2009).

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