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Secondaries from supernova remnants and new AMS-02 data

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Recently, the AMS-02 collaboration has presented data on cosmic ray protons, Helium, electrons and positrons as well as the boron-to-carbon ratio. We present the first consistent modelling of these data, paying particular attention to the contribution due to production and acceleration of secondary electrons and positrons in nearby supernova remnants. This process results in an additional, harder component that becomes dominant at high energies and can explain the rise in the positron fraction observed earlier by PAMELA. We find a concomitant rise in the boron-to-carbon ratio at somewhat higher energies, still in agreement with the latest AMS-02 data. We comment on how data on the antiproton-to-proton ratio (that will be available by the time of this conference) can be used to test this model and distinguish it from other astrophysical explanations of the rise in the positron ratio.

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