Secondary antiproton flux induced by cosmic ray interactions with the atmosphere

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Abstract The atmospheric secondary antiproton flux is studied for detection altitudes extending from sea level up to about 3 earth radii, by means of a 3-dimensional Monte-Carlo simulation, successfully applied previously on other satellite and balloon data. The calculated antiproton flux at mountain altitude is found in fair agreement with the recent BESS measurements. The flux obtained at balloon altitude is also in agreement with calculations performed in previous studies and used for the analysis of balloon data. The flux at sea level is found to be significant. The antineutron flux is also evaluated. The antiproton flux is prospectively explored up to around $2 \times 10^4$ km. The results are discussed in the context of the forthcoming measurements by large acceptance experiments.