



The latest results from the AMS-02 experiment were announced in mid-April at CERN. These were the most precise measurements to date concerning the fluxes of protons, helium and the antiproton-to-proton ratio, extending at the same time the energy range of the PAMELA experiment. Most awaited were the results concerning the production of anti-matter, in particular the measurement of the anti-protons since the latter can be produced by the annihilation of Dark Matter particles which constitutes therefore a primary source. The conventional *Standard Model* production of anti-protons is through the collisions of high-energy cosmic rays with interstellar matter. This mechanism is therefore a secondary production mechanism that constitutes an important background to the signal of new physics through Dark Matter detection. Previous estimates of this background predicted a steep decrease at high energy (hundreds of GeV) of the antiproton-to-proton ratio.

The measurement of AMS02 of a rising ratio would therefore be thought as « a smoking gun » for Dark Matter detection. Such a naive claim has indeed been made based on the latest AMS02 results. The nice thing is that AMS02 has also more precise data for protons and preliminary data about helium fluxes. Using these new and precise data, [a team from IPhT/Saclay and LAPTh](#) has provided a much better evaluation of the background which now shows a much flatter spectrum at higher energies. This extinguishes possible smoke from hypothetical guns. Therefore there is no compelling need for the presence of a primary component, in particular such as the ones that may be triggered by Dark Matter. In turn, the new calculation can now be used to set strong limits on dark matter annihilation cross sections. This analysis also shows the way on how to conduct a global analysis of all data from existing and forthcoming experiments before claiming the observation of a signal of dark matter.