

Fast and accurate AMS-02 antiproton likelihoods for global dark matter fits

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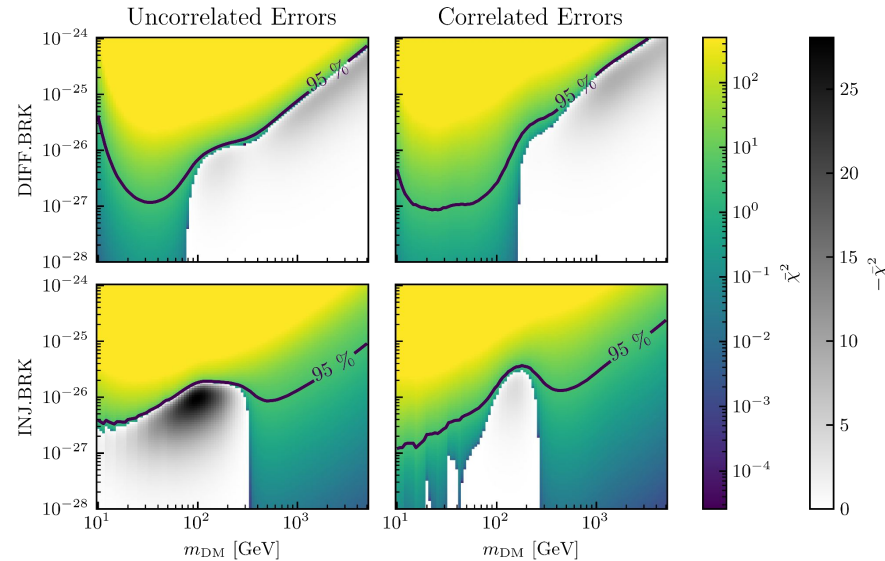
Analysis Pipeline

- Antiprotons - important constrains for WIMP annihilations
- Indirect searches with AMS-02 antiprotons
 - Cosmic ray propagation \rightarrow ~ 10 nuisance parameters
 - Prohibitive in global fits
- Analysis Pipeline:
 - **DarkRayNet v2**
 - Recurrent neural network replacing GALPROP
 - Primary and secondary antiproton spectra
 - **pbarlike**
 - State-of-the-art modeling of data correlations
 - Marginalization over nuisance parameters
 - **GAMBIT 2.4** - global fits!
 - Interface to pbarlike
 - Many likelihoods - direct detection, gamma, neutrino, ...



Is there an antiproton excess?

- Proper treatment of errors \rightarrow reduced significance (1σ and 2.2σ) for DM annihilating into bottom quarks



- **Bonus:** Update on **scalar singlet DM model!**