

Antiproton production Cross-Section (K_S^0)

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Introduction

The final goal of this study is to analyze the antiproton production in proton-Helium collisions at various beam energies.

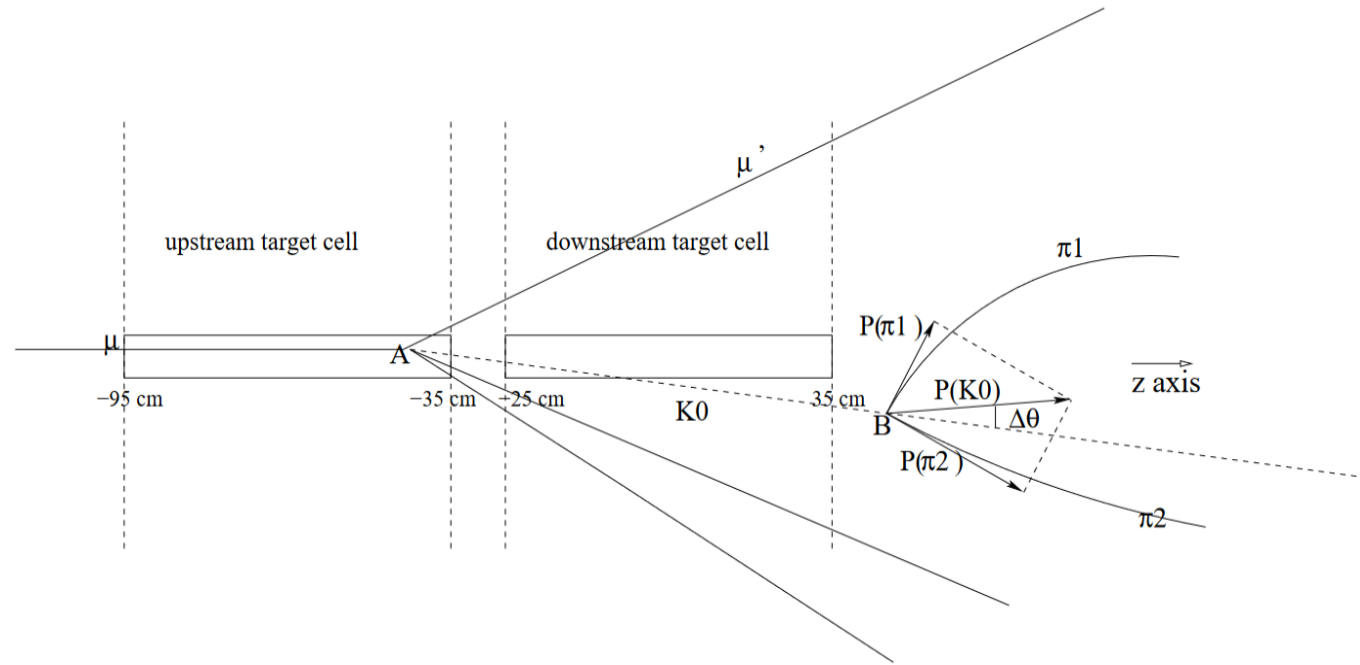
The data was collected during 2 months in 2023.

In order to evaluate the status of alignment and reconstruction, we will use the K_S^0 peak and compare results from 2016 data (Muon run) with the preliminary ones from 2023.

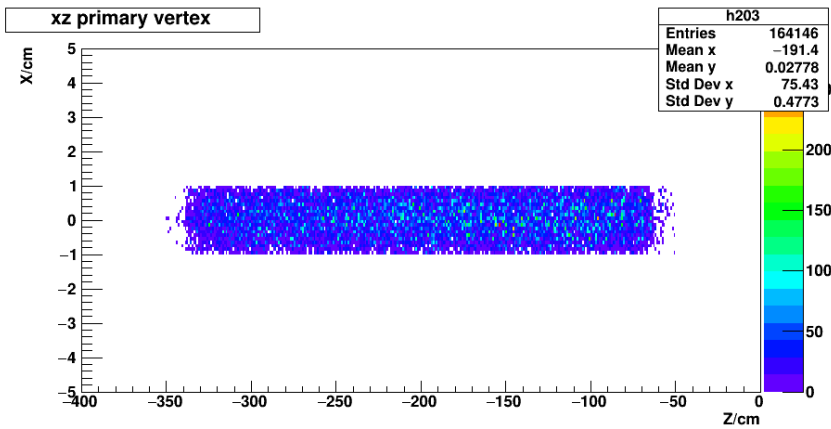
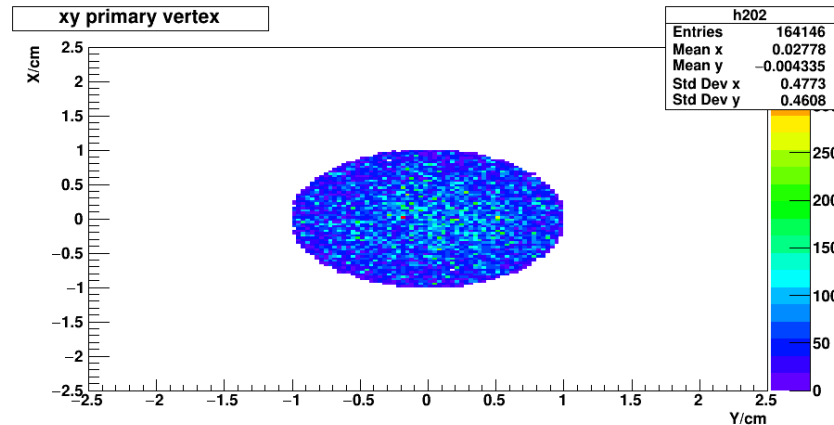
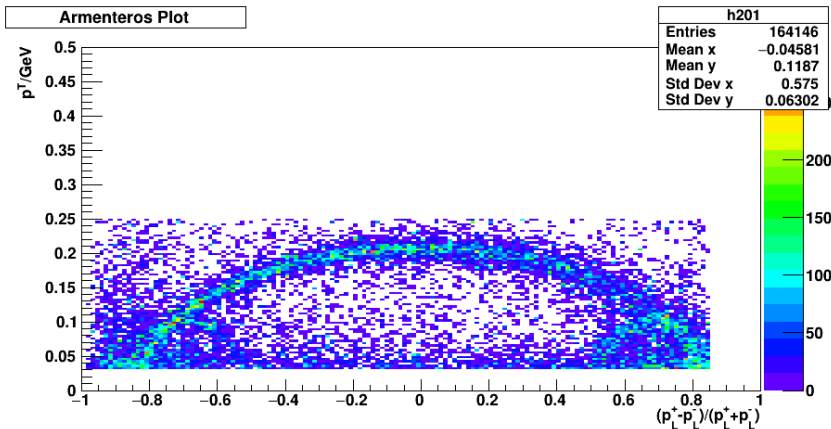
To measure the AMBER spectrometer performance, we will:

- Consider the production of K_S^0 and compare its mass to the PDG value;
- Plot vertex X,Y,Z and the Armenteros-Podolanski plot;
- Calculate Signal to Signal+Background ratio and trying to improve it.

Introduction

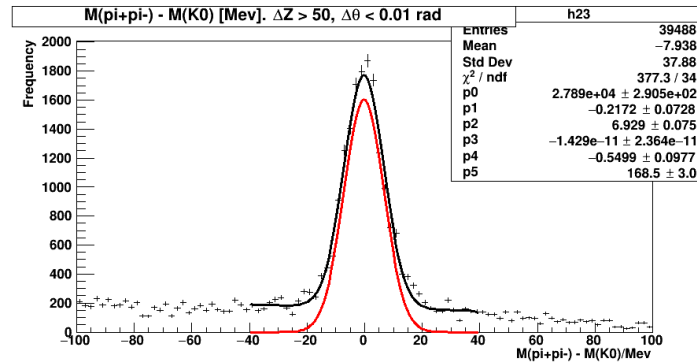
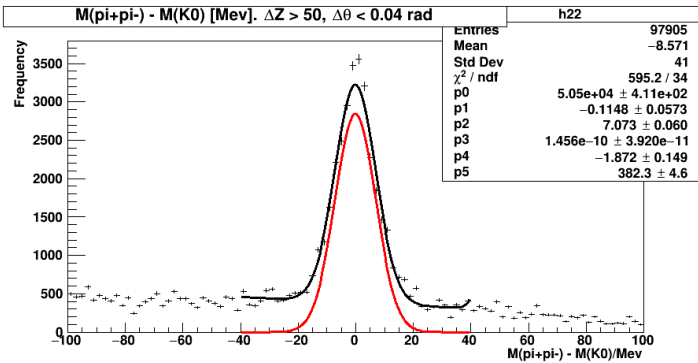
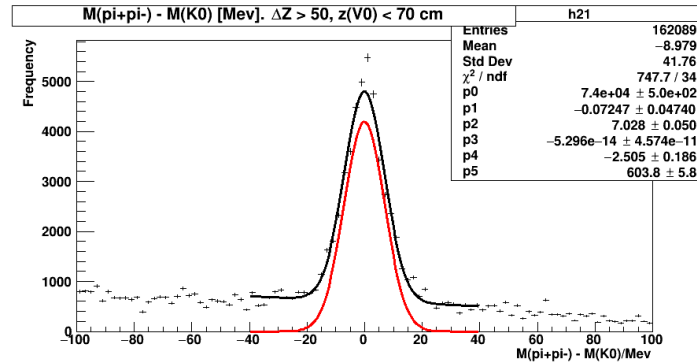
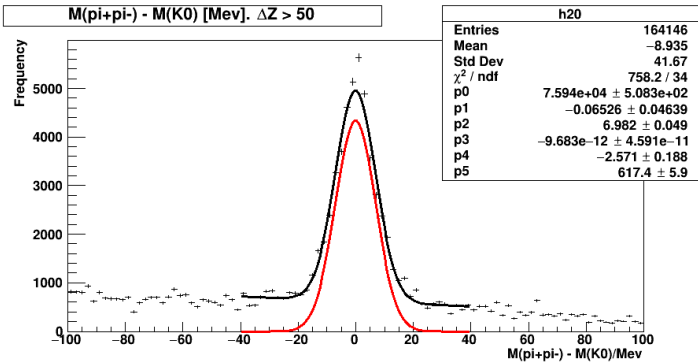


Compass 2016



- Analysis using data from COMPASS 2016
- Hydrogen Target
- Muon Beam

Compass 2016



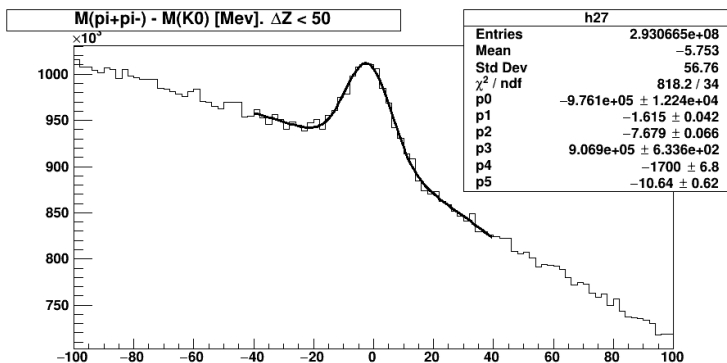
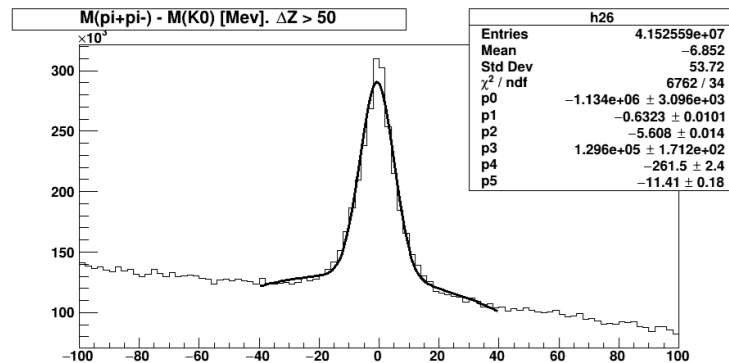
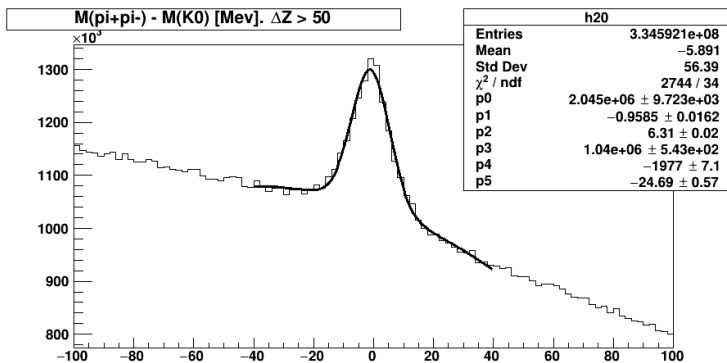
S/(S+B) h20 = 85.41 %

S/(S+B) h21 = 85.25 %

S/(S+B) h22 = 86.08 %

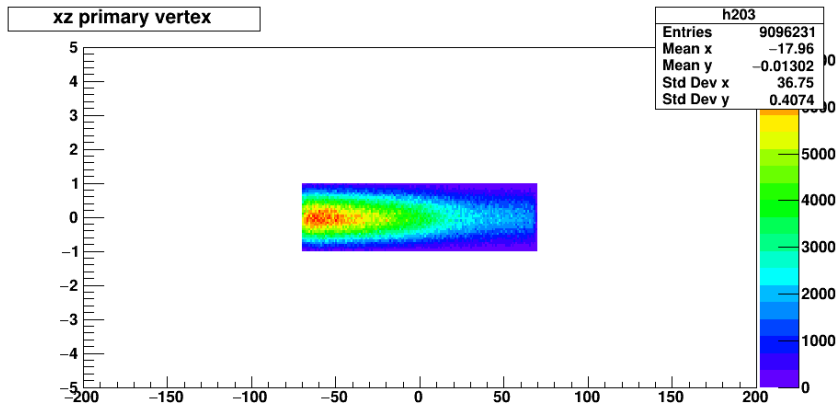
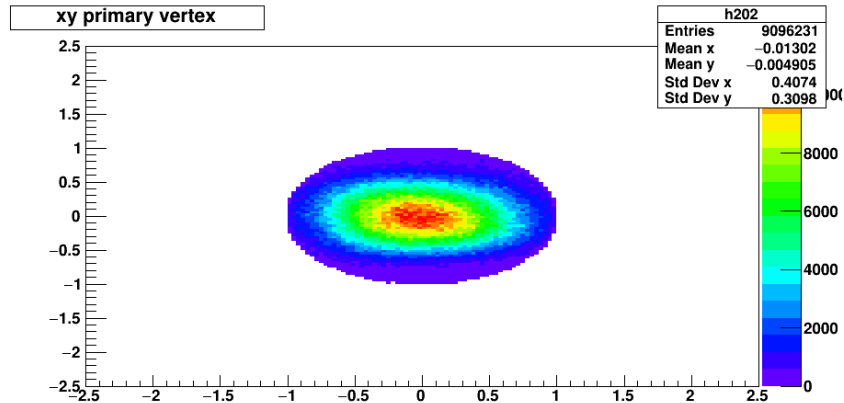
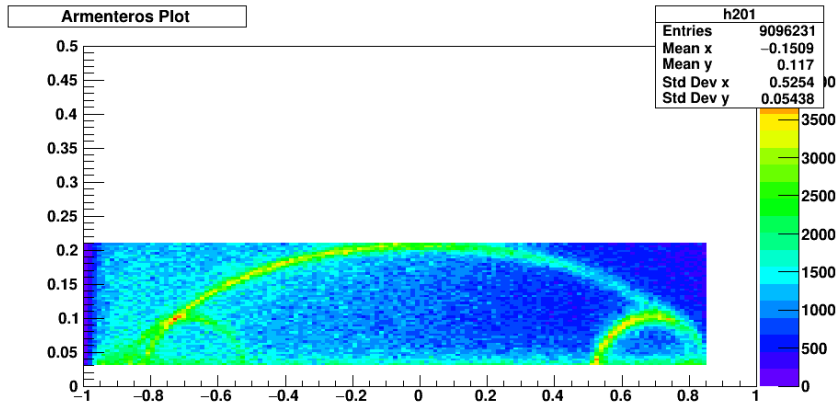
S/(S+B) h23 = 88.65 %

AMBER 2023

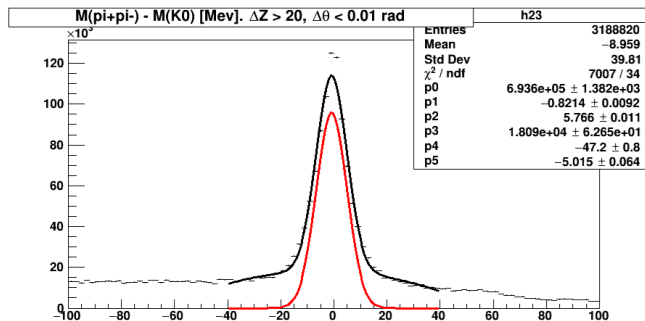
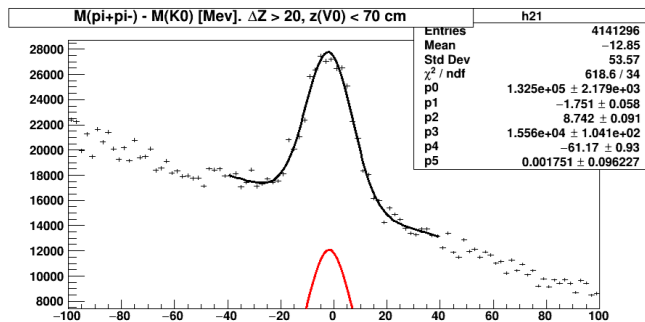
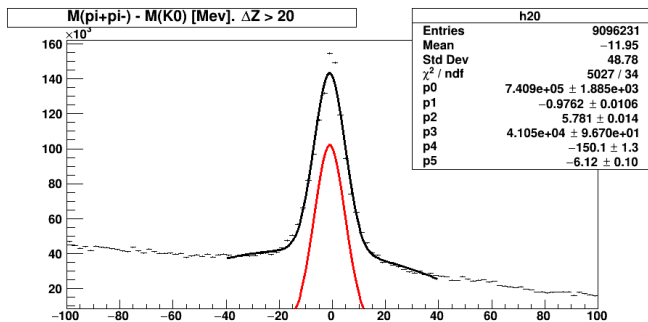


Width is smaller for $\Delta Z > 50$ cm

AMBER 2023



AMBER 2023



Remaking the same histograms with the cuts added.

S/(S+B) h20 = 61 %

S/(S+B) h21 = 39 %

S/(S+B) h23 = 83 %