
Subject: Weird STT reconstruction: efficiency depends on charge
Posted by [Andrew Savchenko](#) on Wed, 16 Jan 2008 18:03:18 GMT
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Hello all,

I'm studying the possibility of excited hyperon states decay reconstruction using Straw Tracker. I found a strange behavior while reconstructing particles of different charge:

- 1) polar angle (theta) is not reconstructed for large amount of events;
- 2) theta for negatively charged particles reconstructed significantly better than for the positively charged ones.

Just for check and to be sure it is not an error in my code, I generated kaons with BoxGenerator using fixed 1.0 GeV/c momentum, fixed 20 degrees polar angle and free azimuth angle (range from 0 to 360).

Results are in the attachments. As you can see, there are a lot of events with unknown polar angle (i.e. 90 degrees, it is just default angle in the reconstruction software). Nevertheless in the k- distribution one can see a peak about 20 degrees, but in the k+ distribution there is only some noise present alongside particles with unidentified angles.

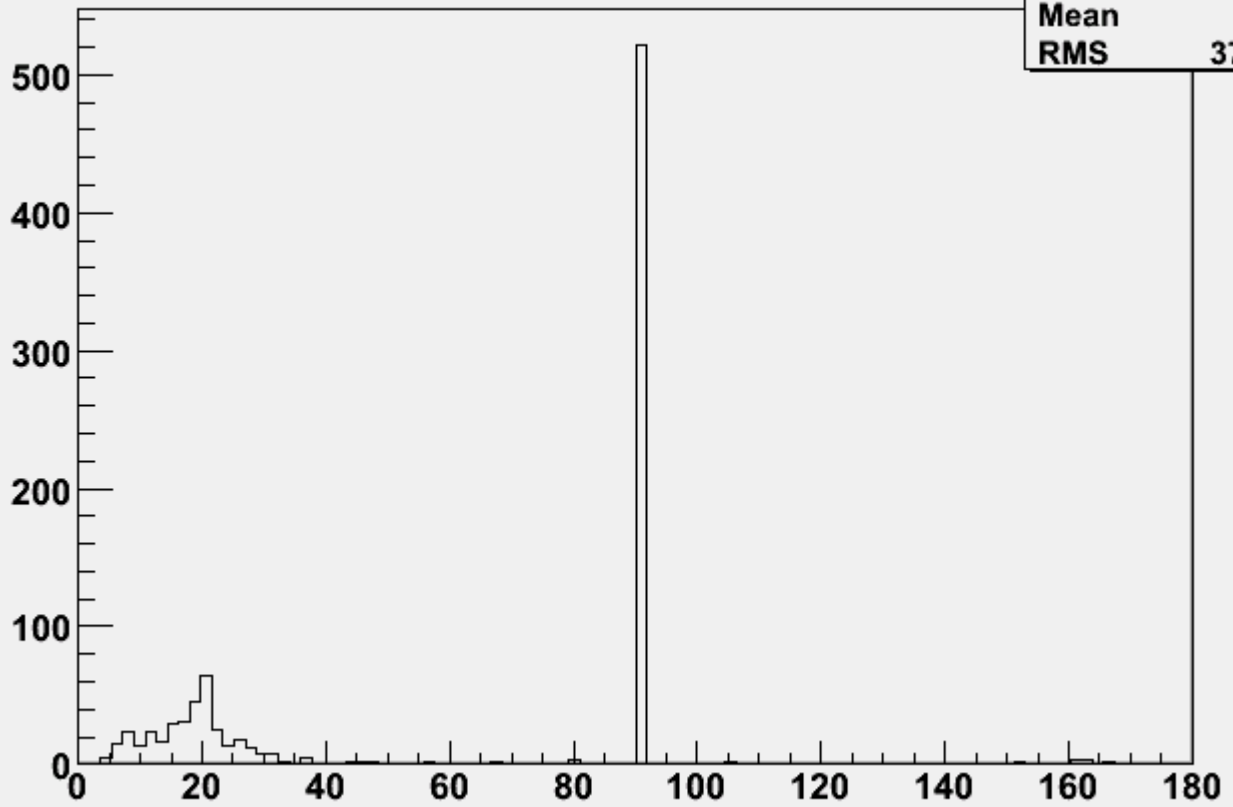
So the question is: is this a bug or I'm doing something wrong?
How this can be fixed? I can see no reason why positively charged particles should be identified worse than negative ones.

For simulation and reconstruction standard marco from pandaroot/macro/stt was used (run.C, rundigi.C and runreco.C)

File Attachments

1) [k-.png](#), downloaded 780 times

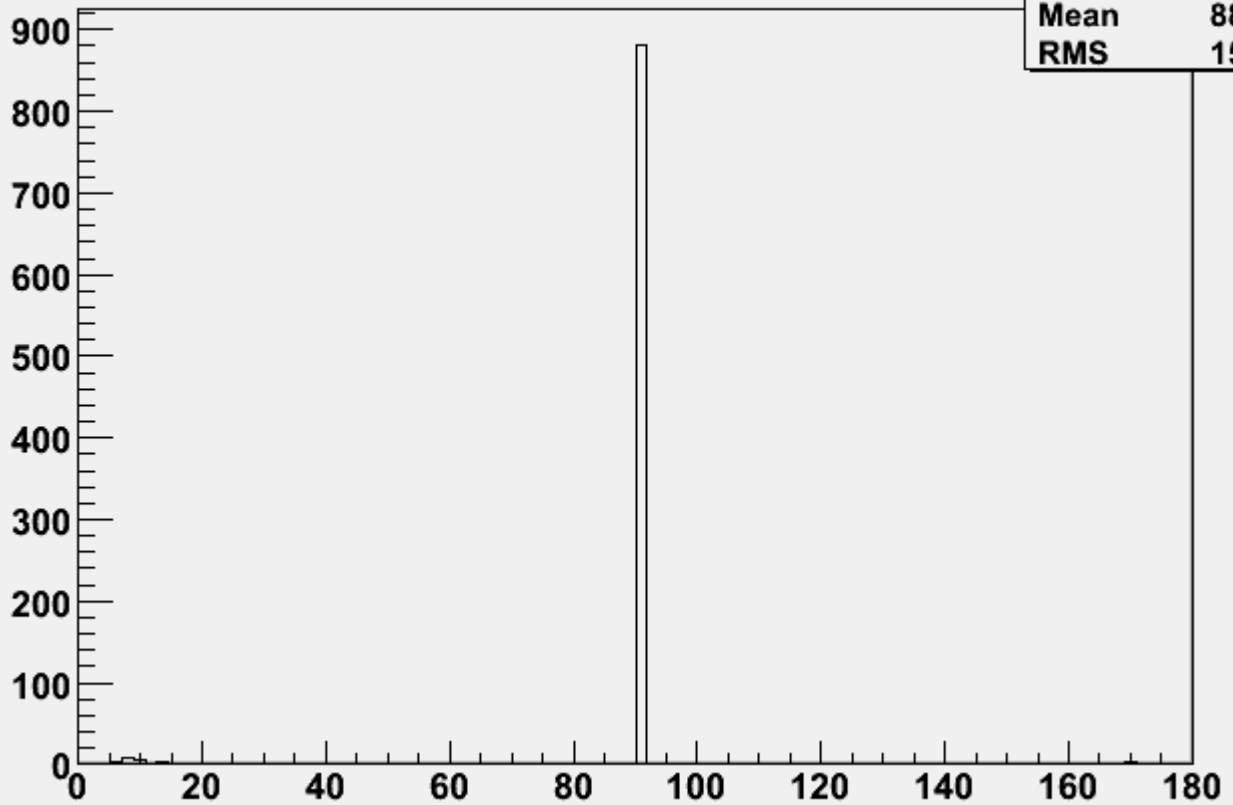
K-(theta), degree



K-(theta)	
Entries	931
Mean	63.1
RMS	37.66

2) [k+.png](#), downloaded 790 times

K+(theta), degree



K+(theta)	
Entries	930
Mean	88.63
RMS	15.92