

Methodical Tests - Documenting #403

Root Phase Space generator test for binary reaction

11/22/2019 05:01 PM - Sergey Belogurov

Status:	Открыта	Start date:	11/22/2019
Priority:	Нормальный	Due date:	
Assignee:	Ilyas Satyshev	% Done:	90%
Category:		Estimated time:	0.00 hour
Target version:			
Description			
Run TGenPhaseSpace for the reaction: d+He3 -> H2+He3 1) with the projectile energy in the Lab ref. frame of 400 MeV per nucleon Draw distributions of the He3 momentum absolute value, theta, Cos(theta), phi and correlations of the values 2) Boost the reaction to the CM ref. frame and run the TGenPhaseSpace there. Draw the same distribution as above but in CM. Cos(theta) and phi distributions should be uniform, absolute value of the momentum should be peak-like, no correlations should be observed in CM. 3) boost the results of 2) to the Lab ref frame and compare with the results of 1) they should be the same. Attach to the issue the macros and the pictures.			

History

#1 - 11/22/2019 05:02 PM - Sergey Belogurov

- Assignee set to Ilyas Satyshev

#2 - 11/22/2019 05:39 PM - Sergey Belogurov

- Description updated

#3 - 12/03/2019 01:56 PM - Ilyas Satyshev

- File 1thetaLab.png added
- File 1phi.png added
- File 1P.png added
- File 1cos_thetaLab.png added
- File 1P_theta.png added
- File 1P_phiLab.png added
- File 1P_cos_thetaLab.png added
- File 1thetaLab_phiLab.png added
- % Done changed from 0 to 30

1) In this case, we used TGenPhaseSpace classically. Distributions were got.

#4 - 12/03/2019 02:48 PM - Ilyas Satyshev

- File 2thetaCMVsphiCM.png added
- File 2thetaCM.png added
- File 2phiCM.png added
- File 2PCMVstheataCM.png added
- File 2PCMVspiCM.png added
- File 2PCMVscos_thetaCM.png added
- File 2PCM.png added

- File 2cos_thetaCM.png added
- % Done changed from 30 to 60

2) The reaction was Boosted to the CM ref. frame and the TGenPhaseSpace is run there. cos(thetaCM) and phiCM distributions are uniformly as we were waiting. The absolute value of the momentum is peak-like. **The correlations question needs to be discussed.**

#5 - 12/03/2019 03:05 PM - Ilyas Satyshev

- File 3thetaLabVsphiLab.png added
- File 3thetaLab.png added
- File 3PVthetaLab.png added
- File 3PVsphiLab.png added
- File 3PVscos_thetaLab.png added
- File 3PLab.png added
- File 3phiLab.png added
- File 3cos_thetaLab.png added
- % Done changed from 60 to 90

3) The results from the previous case were boosted from CM to Lab ref. frame and distributions and correlations for all of them are presented in the corresponding pictures.

#6 - 12/10/2019 11:11 AM - Ilyas Satyshev

- File kinEnergy.png added
- File energy.png added

4. Classically use of the TGenPhaseSpace class gives uniform distribution for the 3He energy. Pictures energy.png and kinEnergy.png show corresponding distributions.

Files			
1thetaLab.png	18.8 KB	12/03/2019	Ilyas Satyshev
1phi.png	17.9 KB	12/03/2019	Ilyas Satyshev
1P.png	20.2 KB	12/03/2019	Ilyas Satyshev
1cos_thetaLab.png	21.1 KB	12/03/2019	Ilyas Satyshev
1P_phiLab.png	22.2 KB	12/03/2019	Ilyas Satyshev
1P_cos_thetaLab.png	21.5 KB	12/03/2019	Ilyas Satyshev
1P_theta.png	19.1 KB	12/03/2019	Ilyas Satyshev
1thetaLab_phiLab.png	21.9 KB	12/03/2019	Ilyas Satyshev
2thetaCMVsphiCM.png	26.2 KB	12/03/2019	Ilyas Satyshev
2thetaCM.png	21.3 KB	12/03/2019	Ilyas Satyshev
2phiCM.png	16.6 KB	12/03/2019	Ilyas Satyshev
2PCMVthetaCM.png	22 KB	12/03/2019	Ilyas Satyshev
2PCMVphiCM.png	19.7 KB	12/03/2019	Ilyas Satyshev
2PCMVscos_thetaCM.png	19.4 KB	12/03/2019	Ilyas Satyshev
2PCM.png	19.7 KB	12/03/2019	Ilyas Satyshev
2cos_thetaCM.png	17.2 KB	12/03/2019	Ilyas Satyshev
3thetaLabVsphiLab.png	21.8 KB	12/03/2019	Ilyas Satyshev
3PVthetaLab.png	18.4 KB	12/03/2019	Ilyas Satyshev
3PVsphiLab.png	21.8 KB	12/03/2019	Ilyas Satyshev
3PVscos_thetaLab.png	18 KB	12/03/2019	Ilyas Satyshev

3thetaLab.png	19.1 KB	12/03/2019	Ilyas Satyshev
3PLab.png	20.1 KB	12/03/2019	Ilyas Satyshev
3phiLab.png	16.3 KB	12/03/2019	Ilyas Satyshev
3cos_thetaLab.png	21 KB	12/03/2019	Ilyas Satyshev
kinEnergy.png	17.3 KB	12/10/2019	Ilyas Satyshev
energy.png	16.5 KB	12/10/2019	Ilyas Satyshev