# **Event Generator Comparisons**

**Recreating Marcel's Plots...** 

Clara Leitgeb

Humboldt University Berlin, 07.12.2023



# $\pi^0$ Energy Spectra



 $E_{\text{beam}} = 1 \text{ TeV}$ , fixed target pp collision (Marcel's version):



HUMBOLDT-UNIVERSITÄT ZU BERLIN

Event Generator Comparisons | Clara Leitgeb | Humboldt University Berlin, 07.12.2023

# $\pi^0$ Energy Spectra

 $E_{\text{beam}} = 6.8 \text{ TeV}$ , central pp collision:



 $E_{\text{beam}} = 1 \text{ TeV}$ , fixed target pp collision:



HUMBOLDT-UNIVERSITÄT ZU BERLIN

Event Generator Comparisons | Clara Leitgeb | Humboldt University Berlin, 07.12.2023

1 TeV fixed target pp collision (Marcel's version)

EPOSLHC:



QGSJET II-04:



SIBYLL 2.3d:



HUMBOLDT-UNIVERSITÄT ZU BERLIN

Event Generator Comparisons | Clara Leitgeb | Humboldt University Berlin, 07.12.2023

 $1\,\text{TeV}$  fixed target pp collision (my version)

EPOSLHC:



10° whole eta range

1<n<2

□ 3 < n < 4

A < 0 < 5

5 5 6 9 6 6

6<0<7

10<sup>-1</sup> 7 < η < 8

8<n<9</p>

10-1 2 < n < 3

1072





HUMBOLDT-UNIVERSITÄT ZU BERLIN

Event Generator Comparisons Clara Leitgeb | Humboldt University Berlin, 07.12.2023

#### $\sqrt{s}=13.6\,{\rm TeV}$ central pp collision

EPOSLHC:





Event Generator Comparisons Clara Leitgeb | Humboldt University Berlin, 07.12.2023





#### $\sqrt{s_N} = 9.6 \,\mathrm{TeV}$ central pO collision

EPOSLHC:





Event Generator Comparisons Clara Leitgeb | Humboldt University Berlin, 07.12.2023





#### $\sqrt{s}=13.6\,\mathrm{TeV}$ fixed target pp collision

EPOSLHC:

SIBYLL 2.3d:

whole eta range

0 0 0 0 4

4<n<8

105





HUMBOLDT-UNIVERSITÄT ZU BERLIN

#### $\sqrt{s_N} = 9.6$ TeV fixed target pO collision

EPOSLHC:

SIBYLL 2.3d:

whole eta range

8 < n < 12

 $\Box 0 < \eta < 4$ 

4< n<8

10<sup>-1</sup> 16 < n < 20

 $12 \le n \le 16$ 





HUMBOLDT-UNIVERSITÄT ZU BERLIN Event Generator Comparisons Clara Leitgeb | Humboldt University Berlin, 07.12.2023

 $E_{\rm beam}=1\,{\rm TeV}$  fixed target pp collision

EPOSLHC:





HUMBOIDT.

711 BERTIN

UNIVERSITÄT



 $\sqrt{s}=13.6\,{\rm TeV}$  central pp collision

EPOSLHC:



SIBYLL 2.3d:



HUMBOLDT-UNIVERSITÄT ZU BERLIN

Event Generator Comparisons | Clara Leitgeb | Humboldt University Berlin, 07.12.2023