

VTX Track Resolution with Beam background Overlay

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Background events : types and timings

背景类型	时间参数	模式类型	物理意义
Pair(Pair production)	-2770	固定时间窗口	事件间隔 2770ns
BGB(Beam-Gas Bremsstrahlung)	4145.41	采样模式 (速率)	每秒发生 4145.41 次 (Hz)
BGC(Beam-Gas Coulomb)	87781.62	采样模式 (速率)	每秒发生 87781.62 次 (Hz)
BTH(Beam-Thermal Photon)	357.20	采样模式 (速率)	每秒发生 357.20 次 (Hz)
TSC(Touschek Scattering)	103.77	采样模式 (速率)	每秒发生 103.77 次 (Hz)

- [updated:/cefs/higgs/shihy/tools/CEPCSW_TDR258S/CEPCSW/Test/Higgs/Pair_250829](https://cefs.higgs.shihy/tools/CEPCSW_TDR258S/CEPCSW/Test/Higgs/Pair_250829)(真实外磁场)

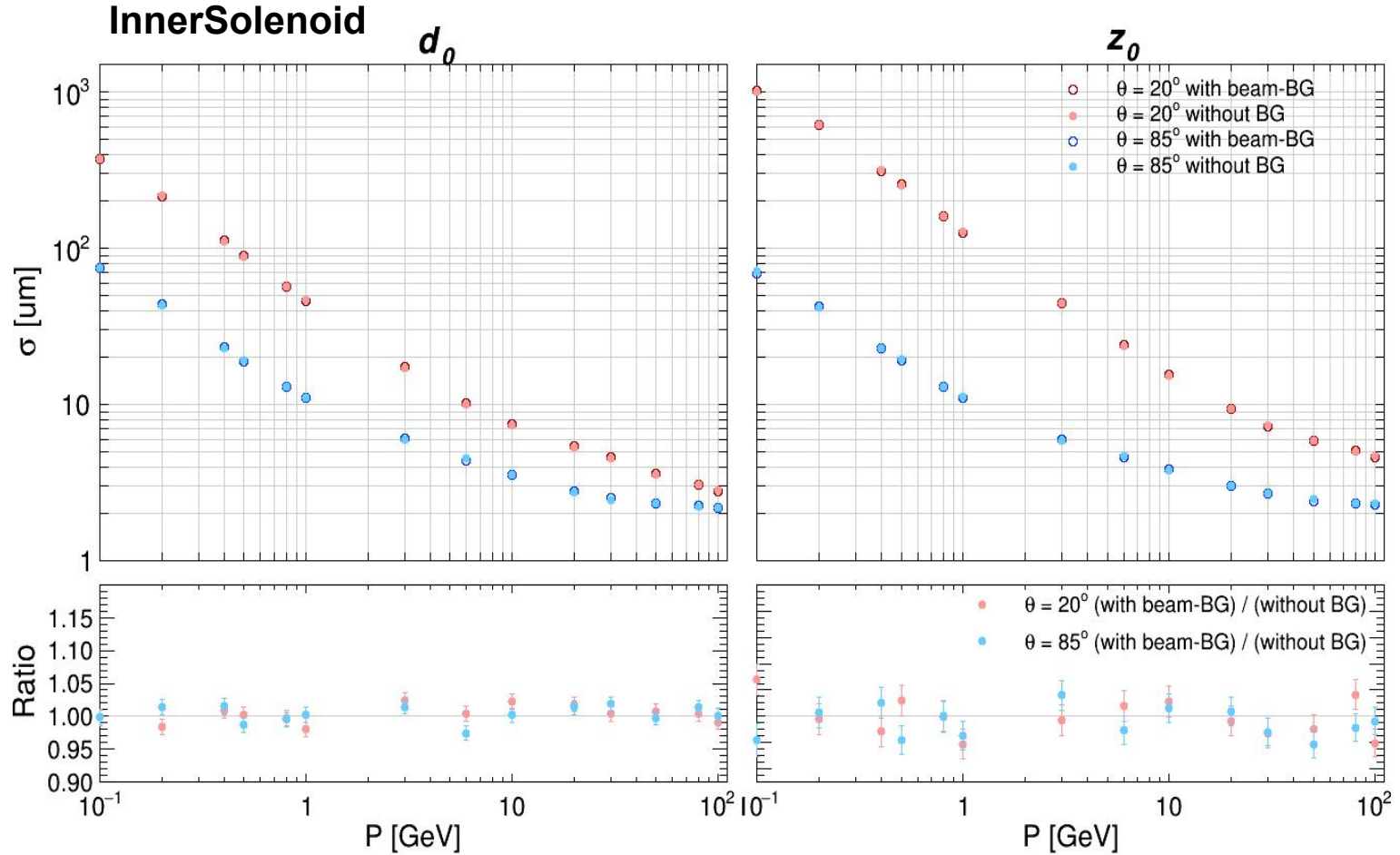
d_0 and z_0 Resolution : With vs. Without Background

- Key Metrics:

d_0 : Transverse impact parameter resolution.

z_0 : Longitudinal impact parameter resolution.

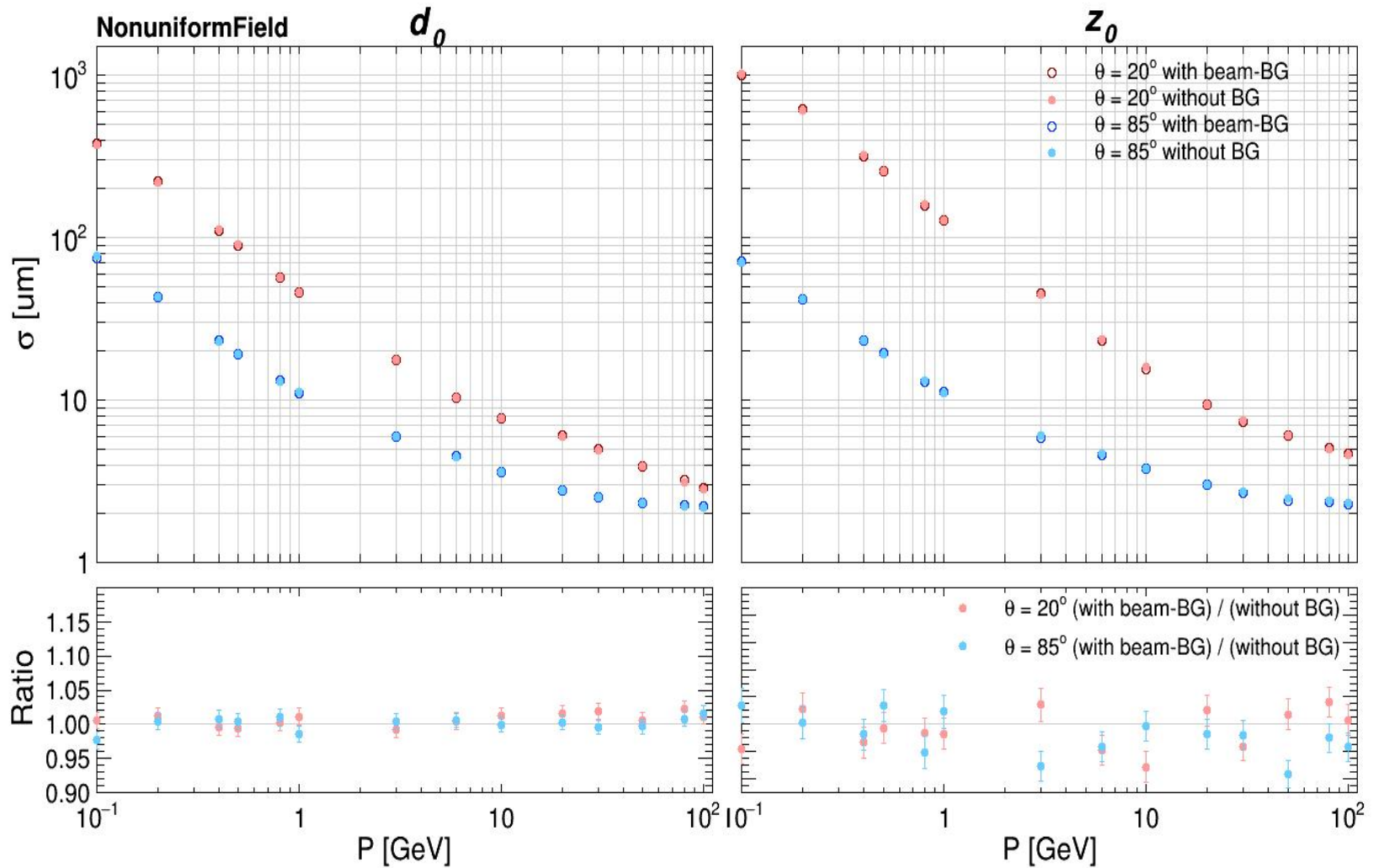
Entries : 10000



- There is **no noticeable degradation** in the resolution of d_0 and z_0 at polar angles of 85° and 20° across the momentum range from 0.1 to 100 GeV.

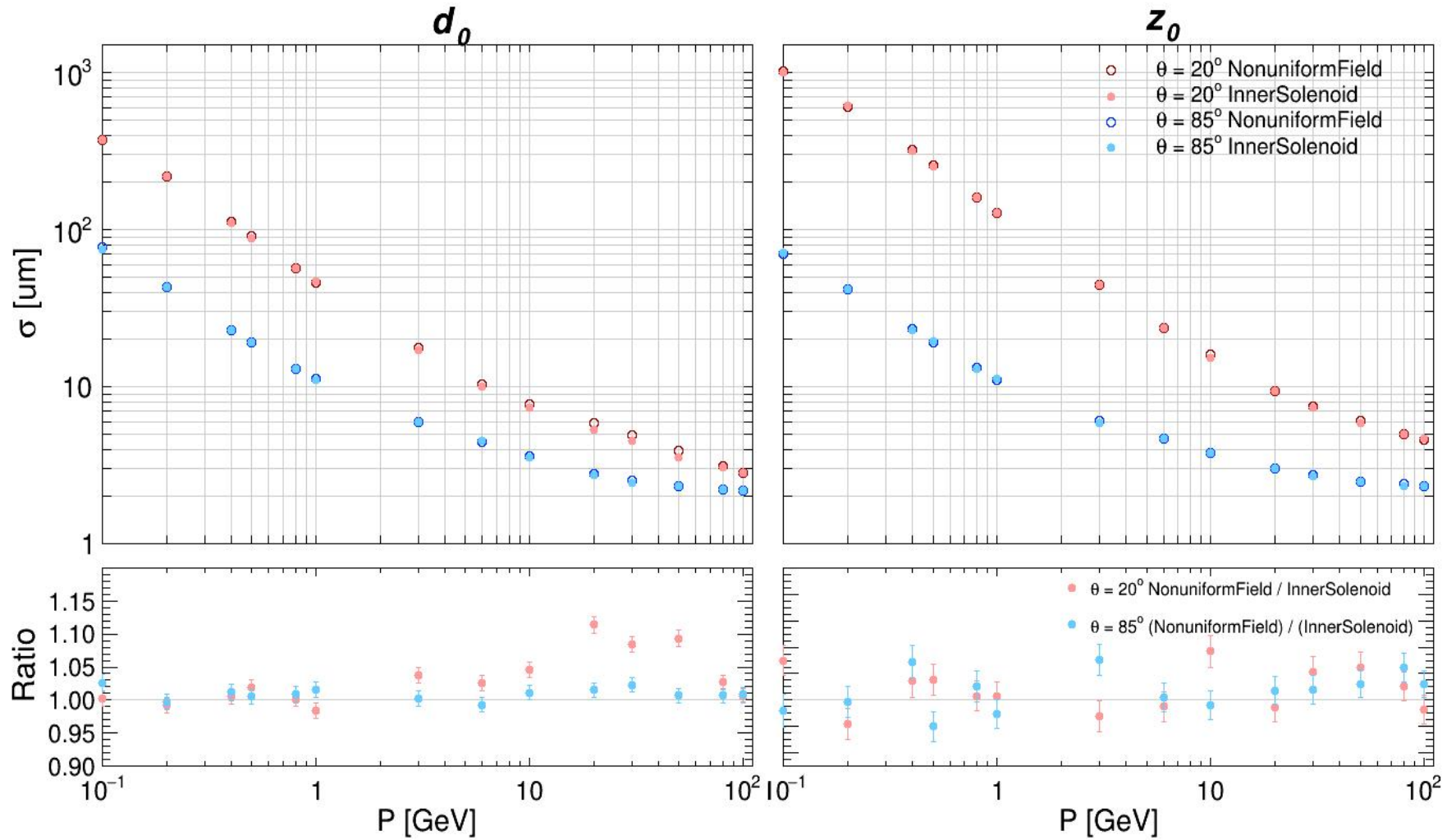
d_0 and z_0 Resolution : With vs. Without Background

geometry_option = "TDR_o1_v01/TDR_o1_v01-onlyTracker-NonuniformField.xml"



- For z_0 , the resolution with background mixing is slightly better than that without background.

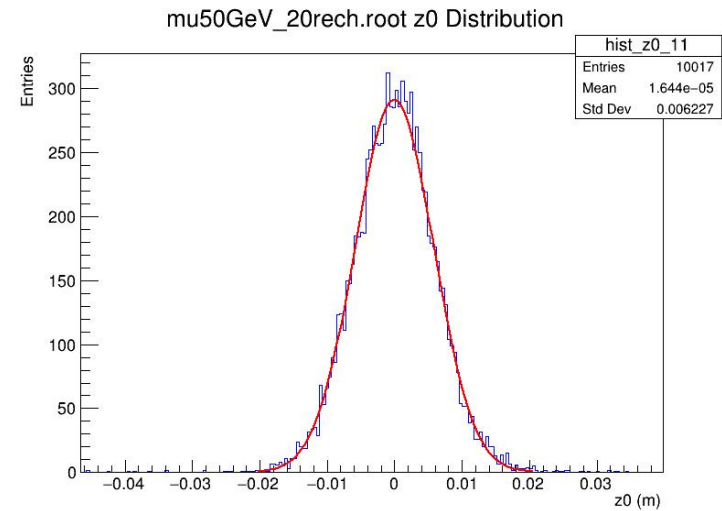
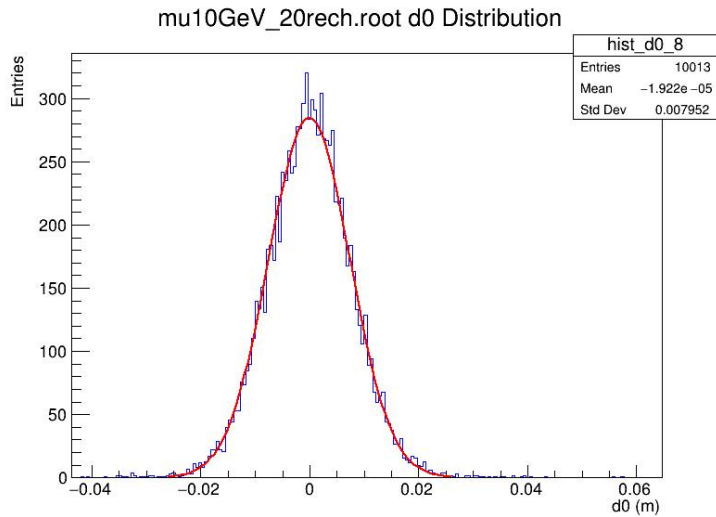
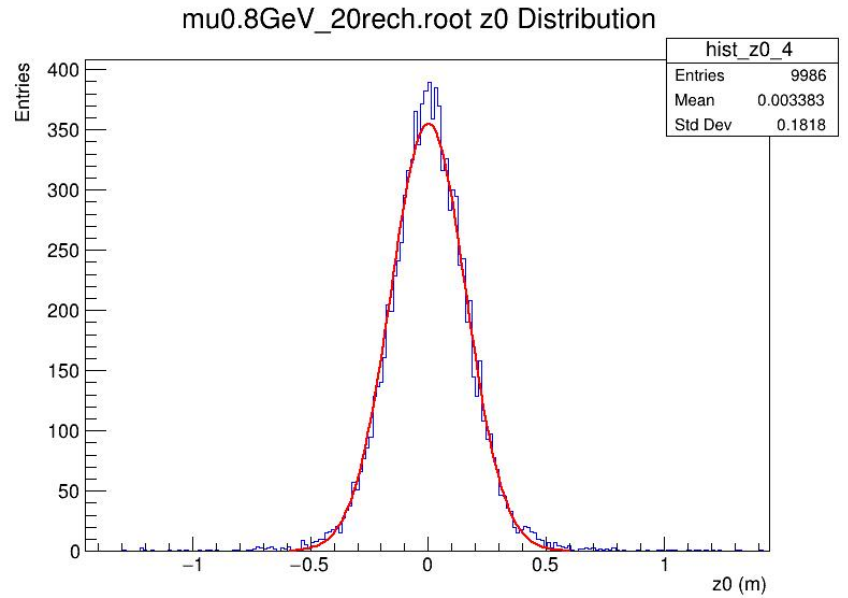
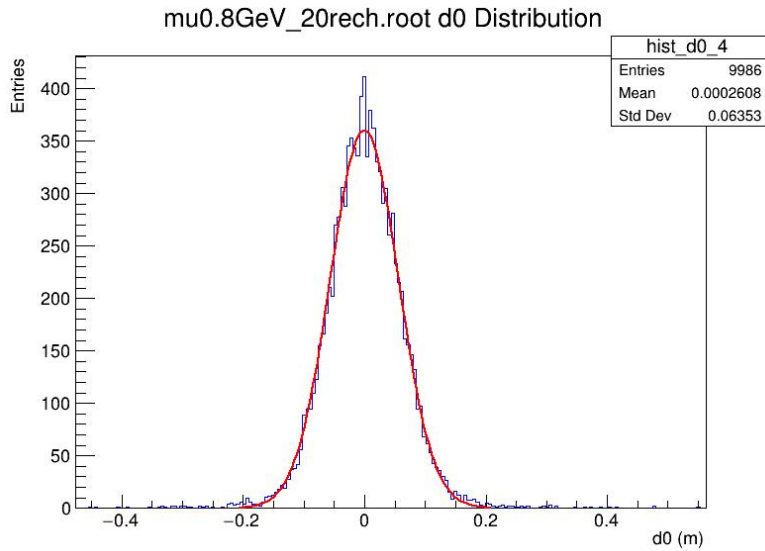
d_0 and z_0 Resolution : NonuniformField vs. InnerSolenoid nobkg



- The resolution is relatively worse under the NonuniformField condition.

Backup

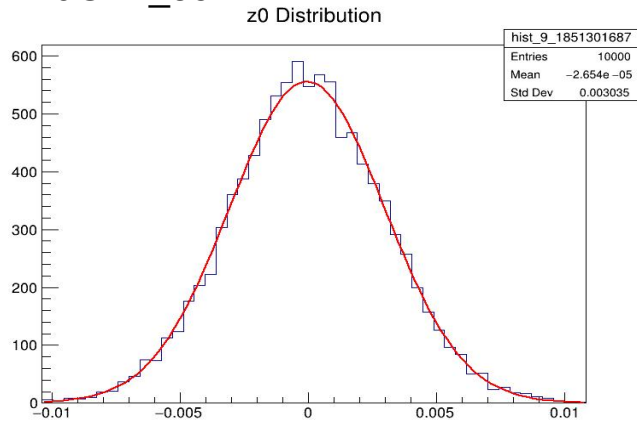
- with beam-BG (Pair Production :250829)



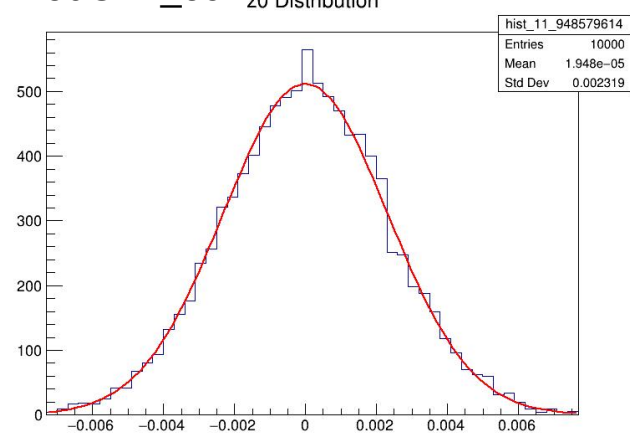
Backup

- with beam-BG (Pair Production :250829)

20GeV_85



80GeV_85



100GeV_85

