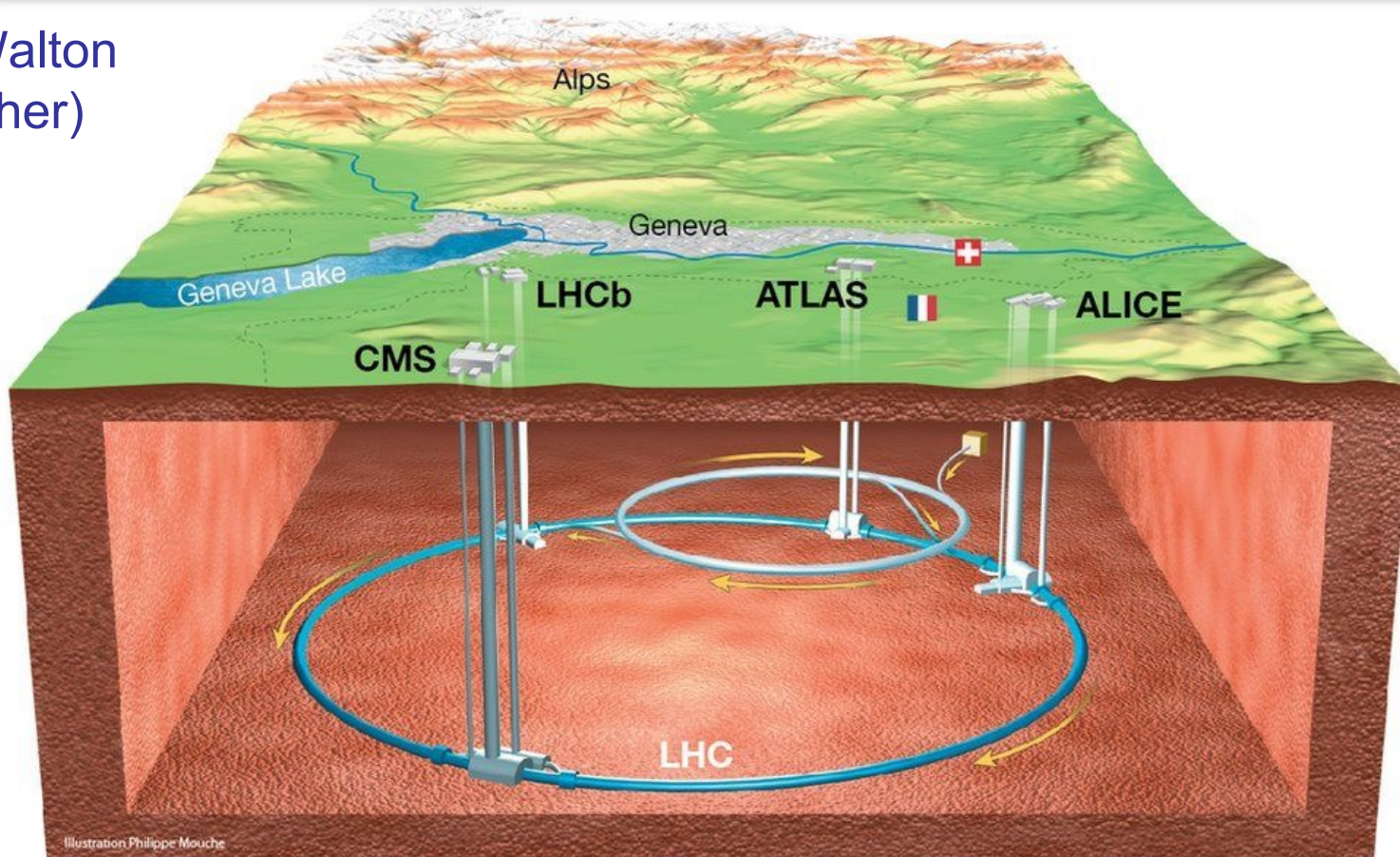


Measuring Particle Production with the LHCb detector

Eliot Walton
(she/her)

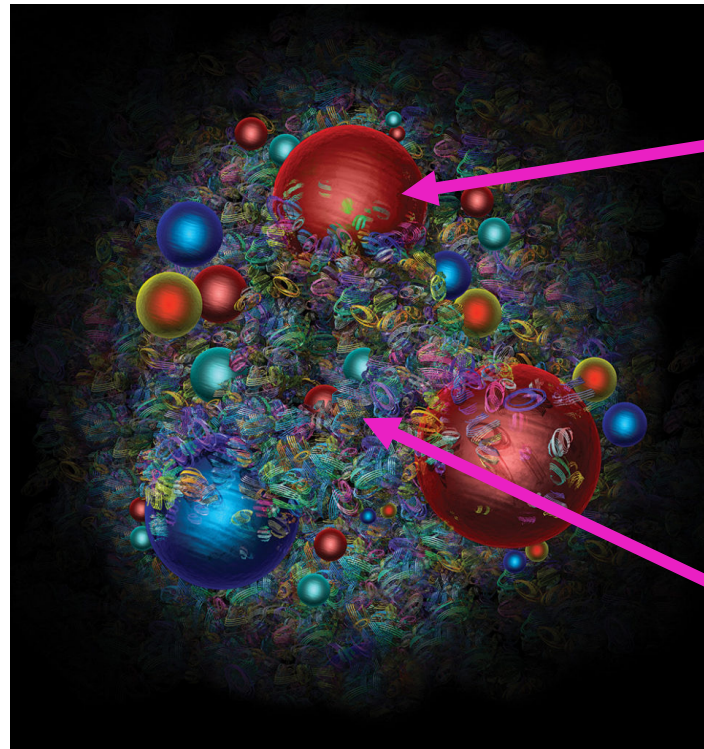


The Proton



Proton

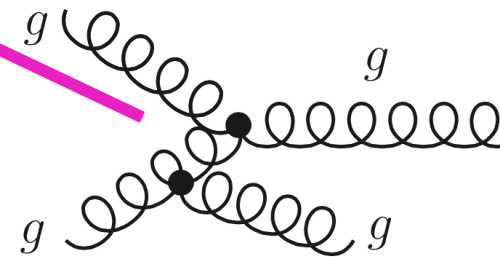
+



Quarks

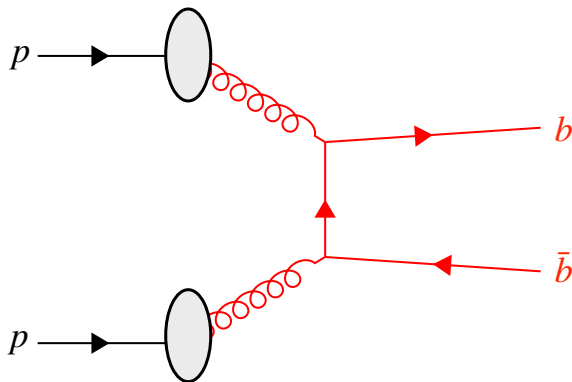


Gluons

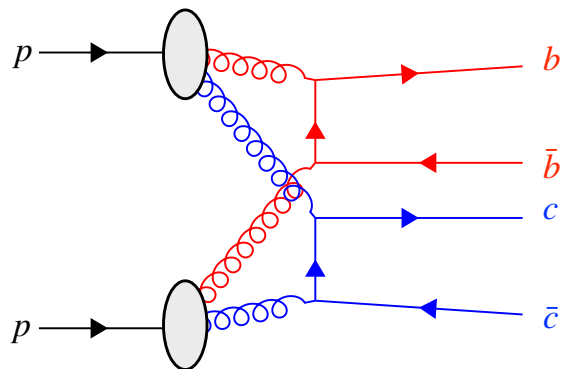


Multi-Parton Interactions

Single Parton Scattering



Double Parton Scattering

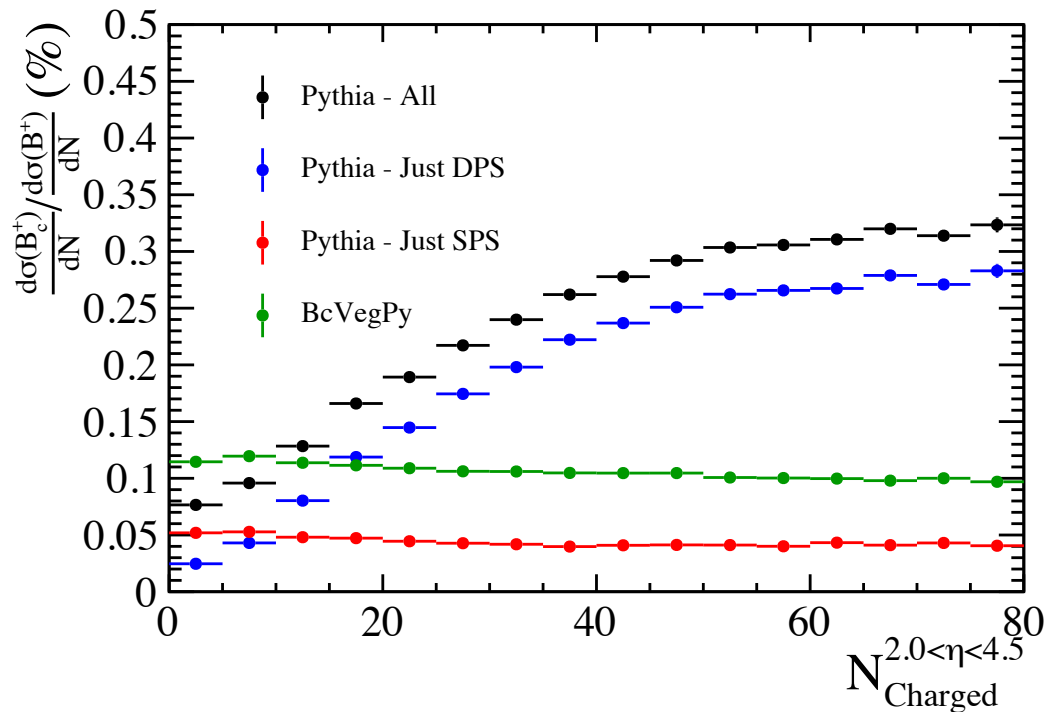


SPS

$$\frac{\sigma(B_c^+)}{\sigma(B^+)} \propto 1$$

DPS

$$\frac{\sigma(B_c^+)}{\sigma(B^+)} \propto (N - 1)$$



References

- [1]. LHCb collaboration, A. A. Alves Jr. *et al.*, The LHCb detector at the LHC, *JINST* 3 (2008) S08005.
- [2]. U. Egede *et al.*, The role of multi-parton interactions in doubly-heavy hadron production, 2022. doi: 10.48550/ARXIV.2205.15681.
- [3]. LHCb collaboration, A. A. Alves Jr. *et al.*, Evidence for modification of b quark hadronization in high-multiplicity pp collisions at $\sqrt{s} = 13$ TeV, arXiv, 2022. doi: 10.48550/ARXIV.2204.13042.

