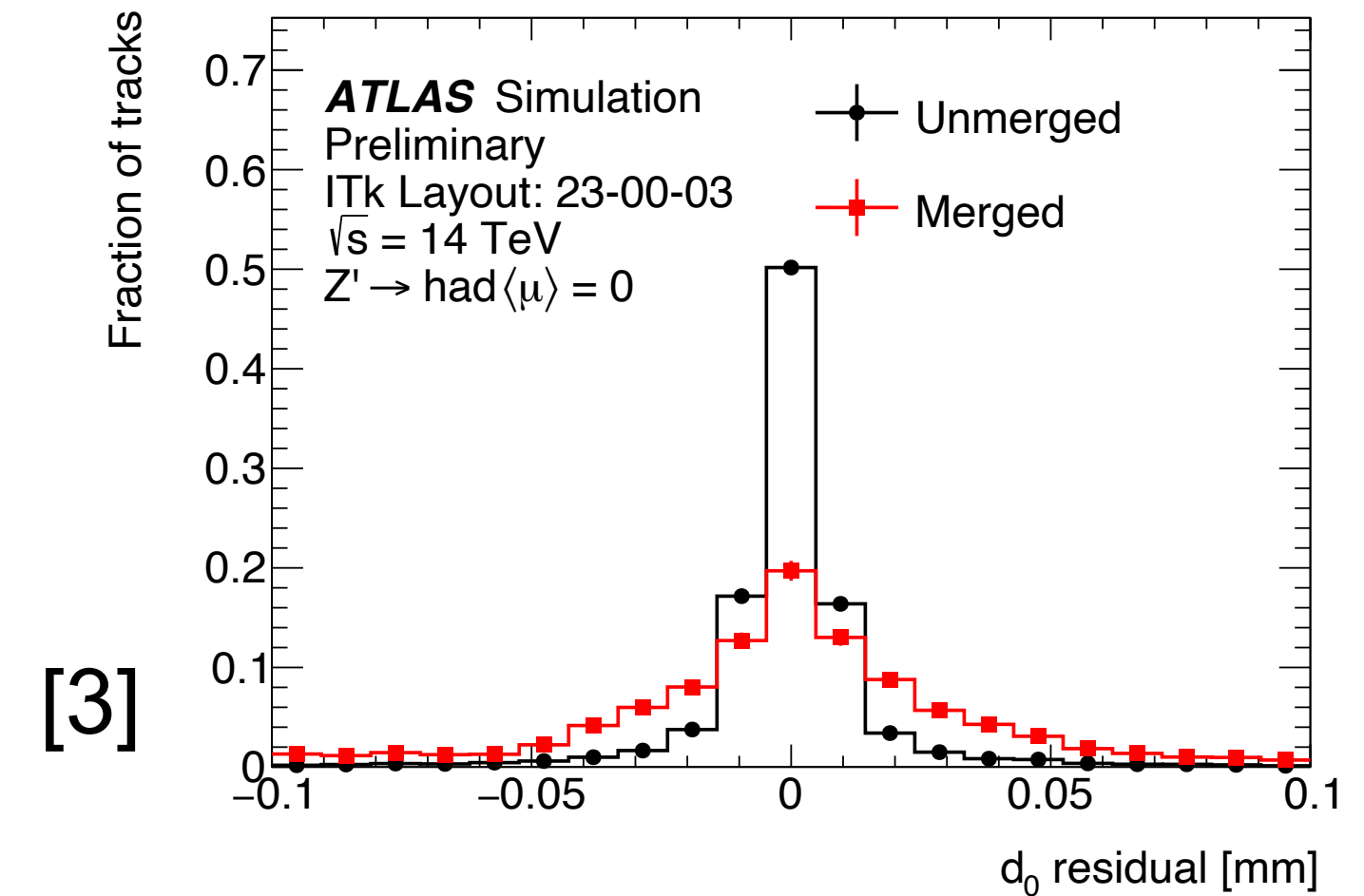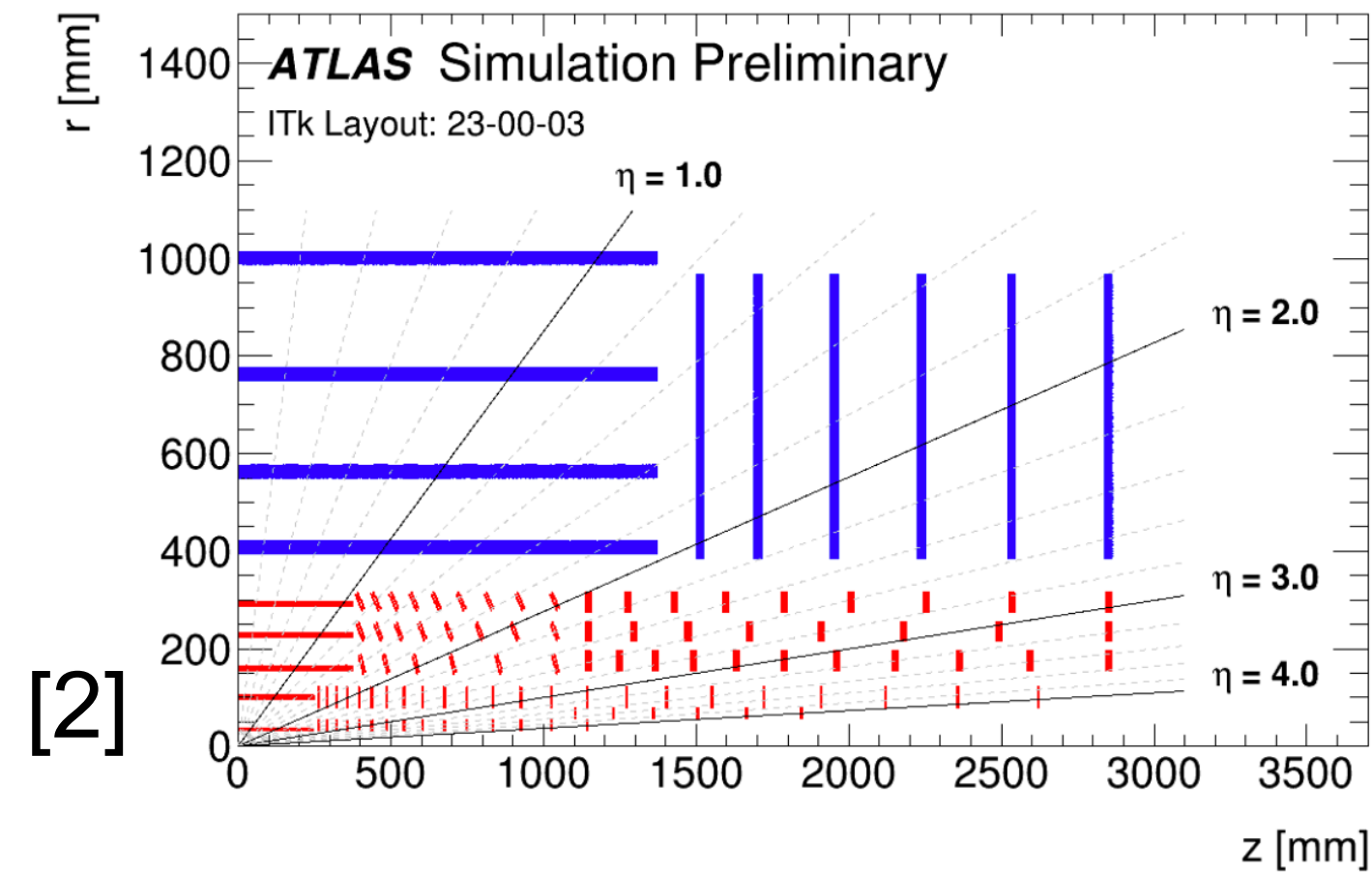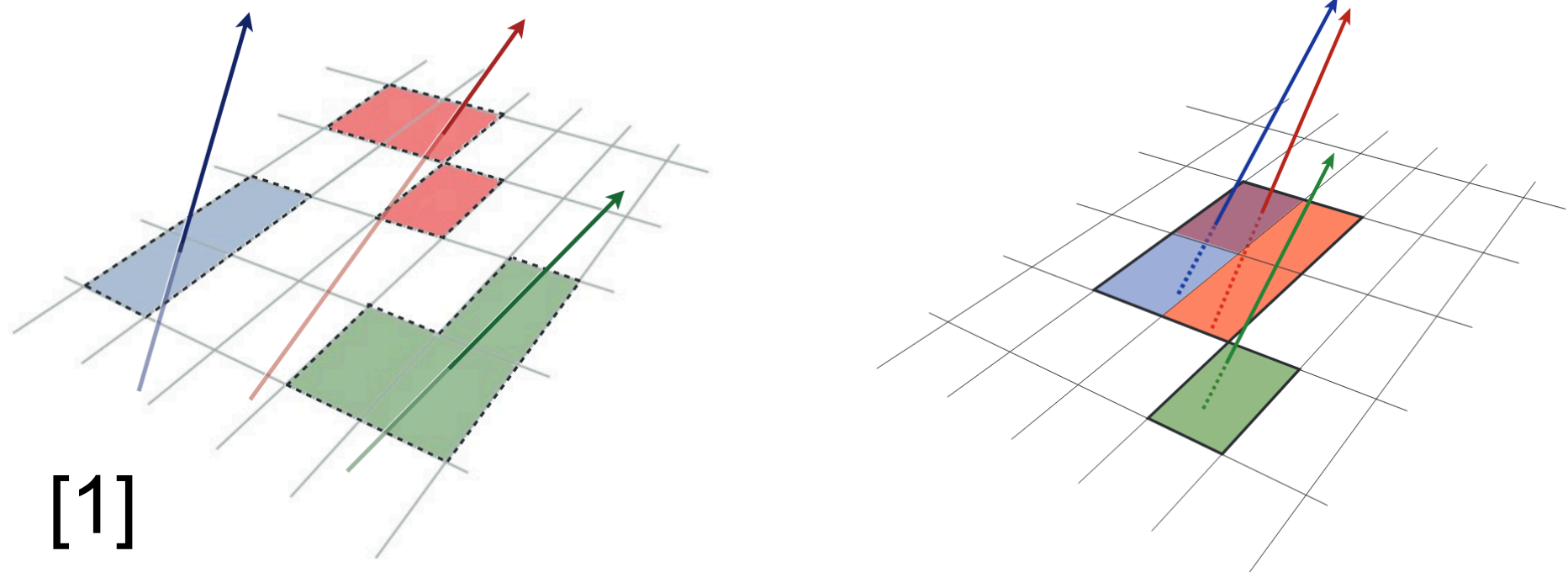# Clustering and tracking in dense environments with the ATLAS ITk

[1]

[2]

[3]

> In the core of high-pt jets, silicon clusters can merge

> Cluster merging affects

- Tracking quality

- Tracking efficiency

> Merged clusters identified and split with current ATLAS ID

> For HL-LHC ATLAS will get a new tracker

- Better granularity

> Expected tracking performance in dense environments?

> Teaser: d_0 residual

- $d_0 - d_0^{\text{truth}}$

References

> [1] ATLAS Collaboration, Performance of the ATLAS track reconstruction algorithms in dense environments in LHC Run 2, Eur. Phys. J. C 77 (2017) 673

> [2] ATLAS Collaboration, Expected tracking and related performance with the updated ATLAS Inner Tracker layout at the High-Luminosity LHC, tech. rep. ATL-PHYS-PUB-2021-024

> [3] ATLAS Collaboration, Clustering and Tracking in Dense Environments with the ATLAS Inner Tracker for the High-Luminosity LHC, ATL-PHYS-PUB-2023-022