

# ACTS Vertexing and Deep Learning Vertex Finding



- Detector-independent track- and vertex reconstruction software [ACTS](#)
  - ➔ MT-capable vertexing suite, modern C++
- Numerically validated w.r.t. to original ATLAS implementation
  - Significant speed-up w.r.t. to ATLAS implementation
- Ongoing vertexing developments in ACTS:
  - Vertex seed finder based on Gaussian Grid Track Density
    - Physics performance comparable with original continuous ATLAS version
      - ➔ Speed-up of factor  $\sim 35$  for high track multiplicities
  - Siamese Neural Network Vertex Finder
    - Predict score that two tracks come from the same vertex
    - Construct graphs with
      - nodes: tracks
      - edges: scores
    - Cluster graphs to subgraphs (i.e. vertices)

