Studies of track reconstruction performance in the ATLAS Event Filter for the HL-LHC

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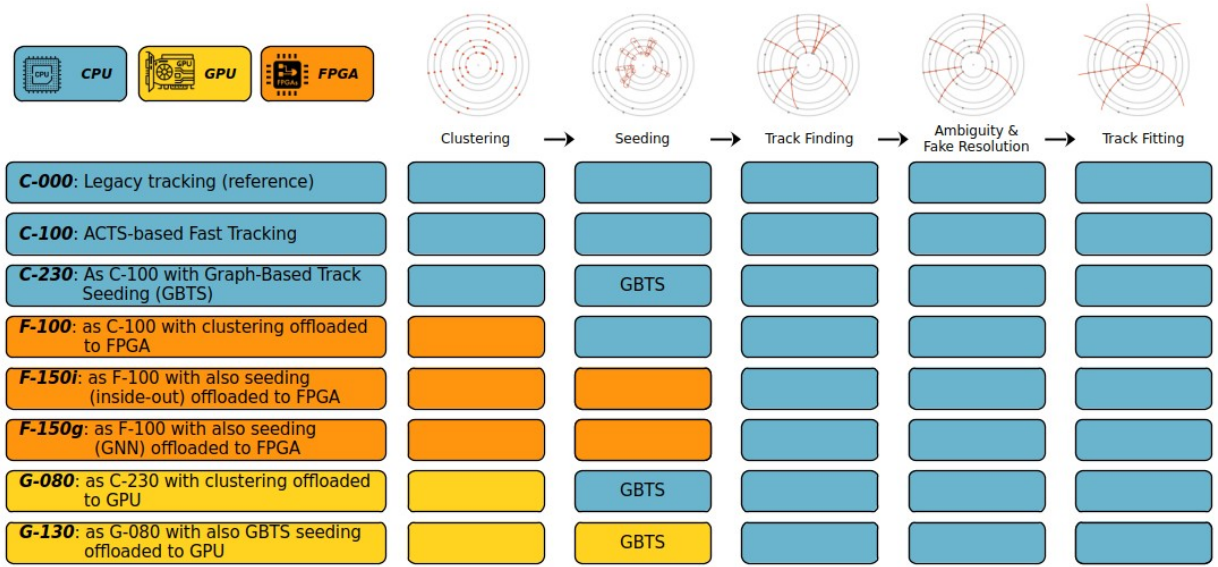
EF Tracking for the ATLAS Phase-II Upgrade



- At High Luminosity LHC (HL-LHC), extremely **challenging pile-up conditions** → **Major upgrade** of the ATLAS Inner Tracker and Trigger and Data Acquisition (TDAQ) System
- Event Filter (EF) System: **processing farm of commodity hardware** (CPU, GPU, FPGA) to select events to reduce the final output rate
- Roughly **80% of the computing power** of the EF System is dedicated to **track reconstruction**
- **Tracking performance is critical** to keep rate low and achieve the ATLAS HL-LHC physics goals
  - → Extensive R&D of various EF tracking “pipelines” with steps executed on CPU, GPU, FPGA

EF Tracking performance

- Tracking performance for the proposed technology choices tested with respect to different parameters:
  - Tracking efficiency
  - Impact parameter resolution
  - Robustness against increasing pile-up
- **Remarkable tracking performance achieved across all proposed technologies**
- For more details

  → **please, come see my poster!**