Study of track resolution in IDEA DCH

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Status Report

- **Motivation**: studies on the resolution in IDEA full simulations are needed to provide the parameters to DELPHES fast simulation
- **Procedure**:
  - Simulation and reconstruction with IDEA standalone code interfaced with KEY4Hep
    https://github.com/HEP-FCC/IDEADetectorSIM.git
    → We use the output in EDM4Hep format
  - Analysis procedure (*https://github.com/HEP-FCC/FCCeePhysicsPerformance.git*)
    → Plot residuals: (pT,RECO – pT,MC) /pT,MC2 fit with a single gaussian
    → Plot sigma vs pTOT
- Made using the gitlab repositories and the instructions provided by Lia *googledoc*
- **Simulation set**:
  - 40 combinations: 5 θ values [10,30,50,70,89]° * 8 pTOT [0.5,1,2,5,10,20,50,100] GeV/c
  - Issue in the production: at CERN we quickly fill the disk quota and timescale was 1week
    → **move to CNAF** (Many thanks to F. Fanzango for the support)
  - **Major update (wrt Lia's presentation at *P&P meeting*)**: run at CNAF using condor queues
    - Using the grid storage → voms-proxy-init --voms fcc
    - Each job has 40 runs
    - (TBC) Each job instals the code on a cluster node
    - Store in a directory and zip the output
  - **Procedure validated by Lia**, starting with electrons production
  - Aiming for electrons, muons and pions production that we will split among us (baseline: 10k events per run)
  - **Timescale for the production:**
    → 100 jobs in 24h, each with 40 points and 100 events per point → 10k events in total in 24h
- **Documentation (Many thanks to Patrizia)**: efforts starting *here*