Truth info in reconstruction
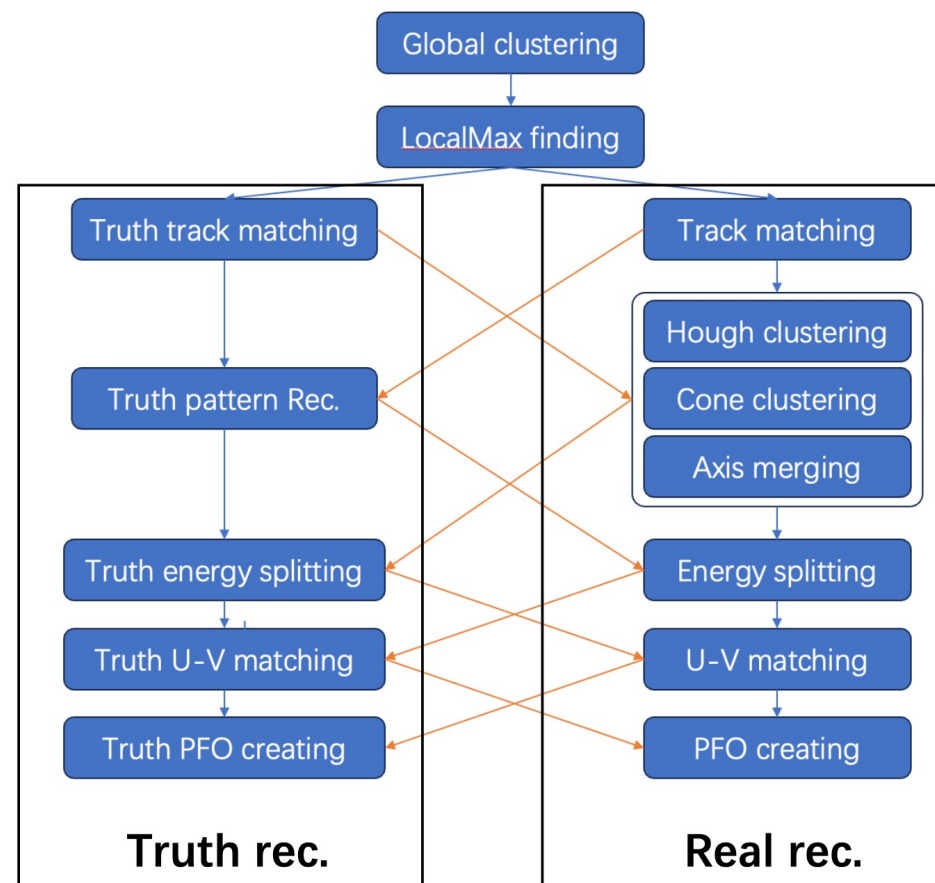
Introduction

- **Introduce the MCParticle info in reconstruction**
  - Simulation: G4 step – primary MCParticle.
  - Digitization:
    - For each DigiHit: vector<MCParticle, weight>
    - $weight_i = \dfrac{E_{MCParticle\ i}}{E_{hit}}$
  - Reconstruction:
    - For each object:
      - std::vector< std::pair<edm4hep::MCParticle, float> > getLinkedMCP()
      - edm4hep::MCParticle getLeadingMCP()
      - float getLeadingMCPweight()
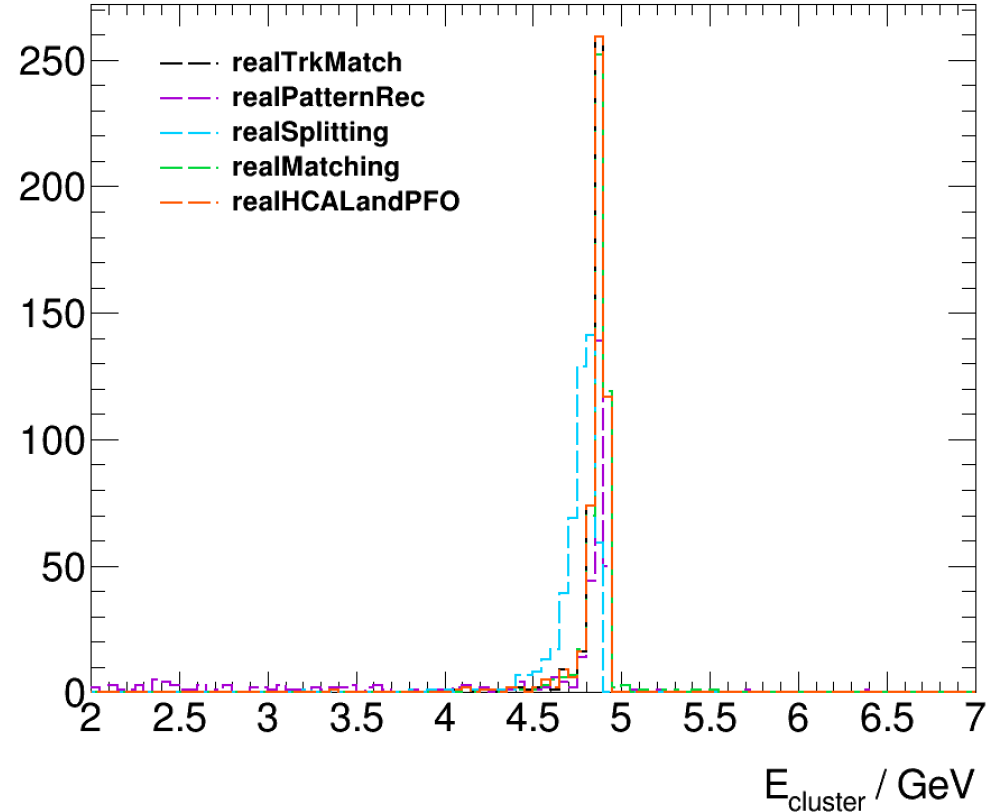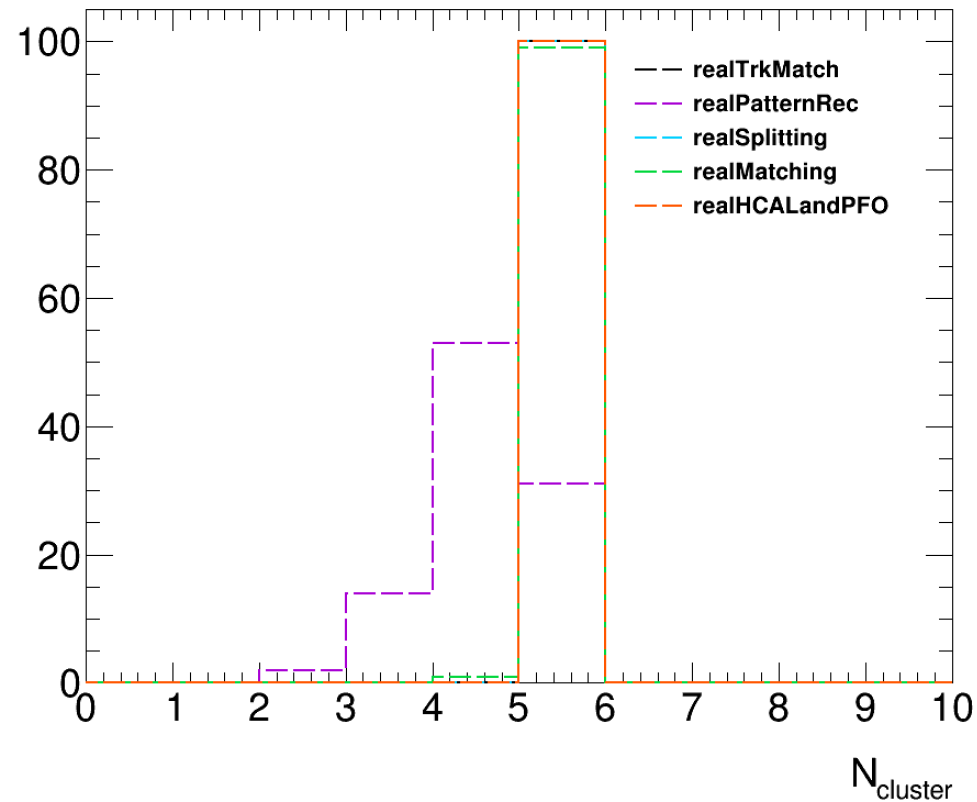   - Truth-info based reconstruction algorithms.

Truth reconstruction

- **Performance check: pseudo-jet:**
  - 5 photons in $\theta \times \phi \in 20° \times 20°$ region, E=5GeV
  - Turn on one part of real-rec algorithm (realXXX), others are truth-based reconstruction.

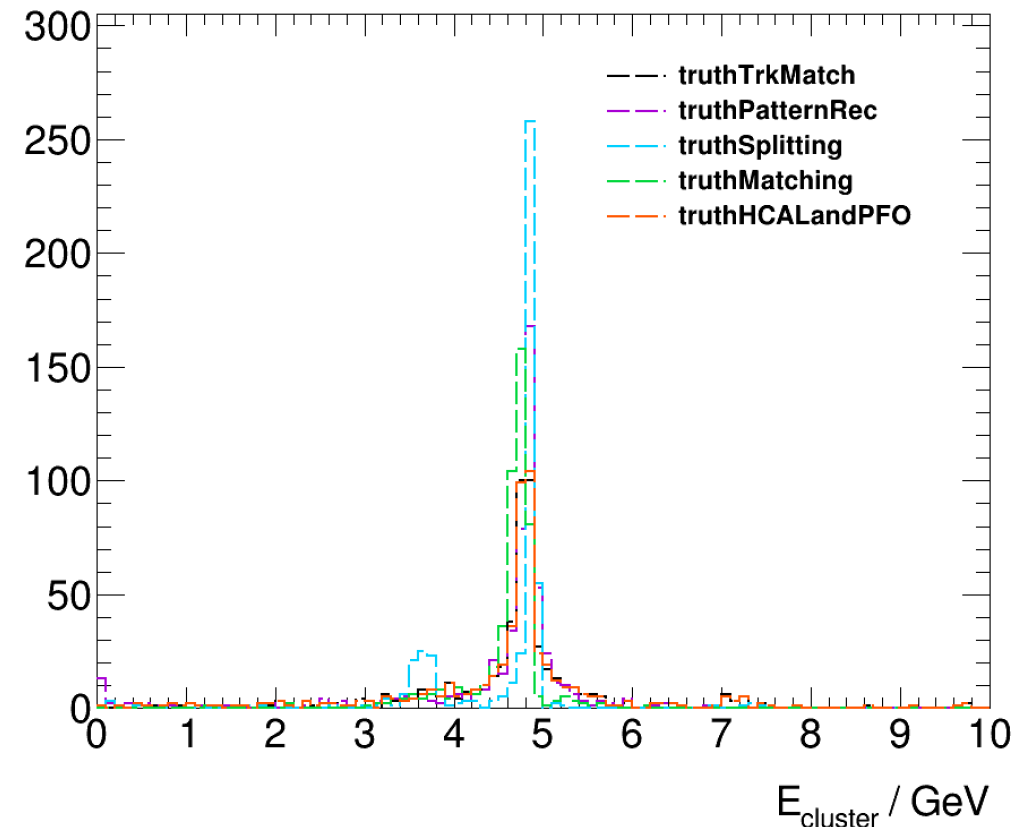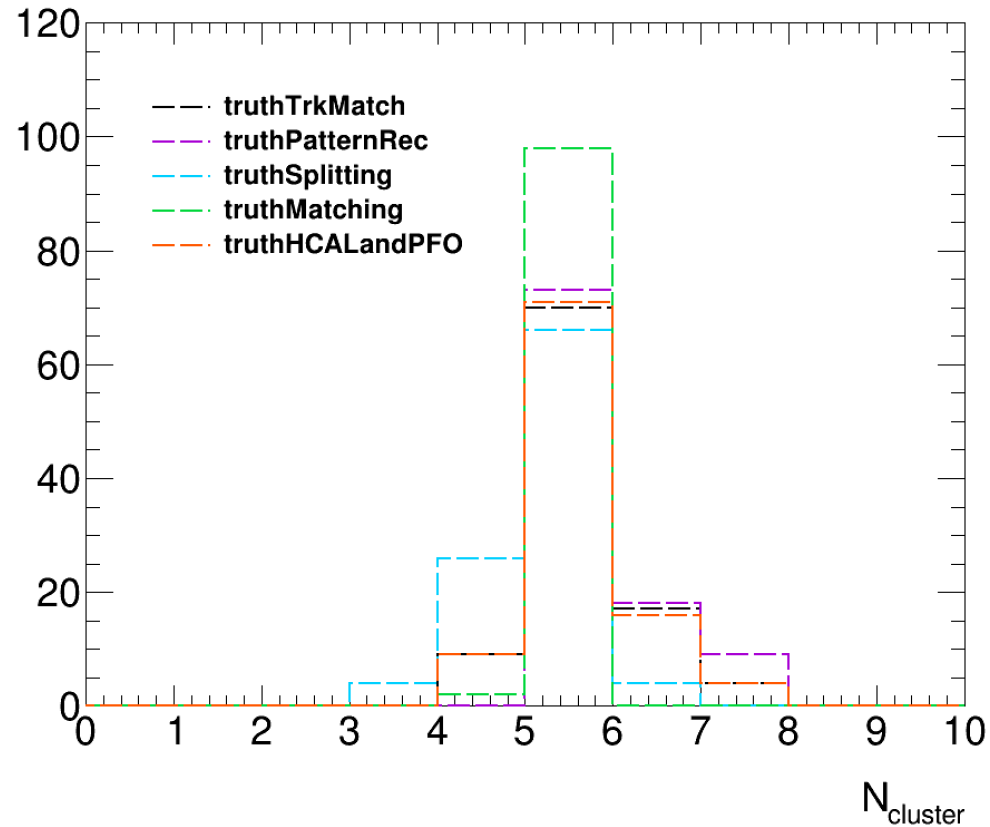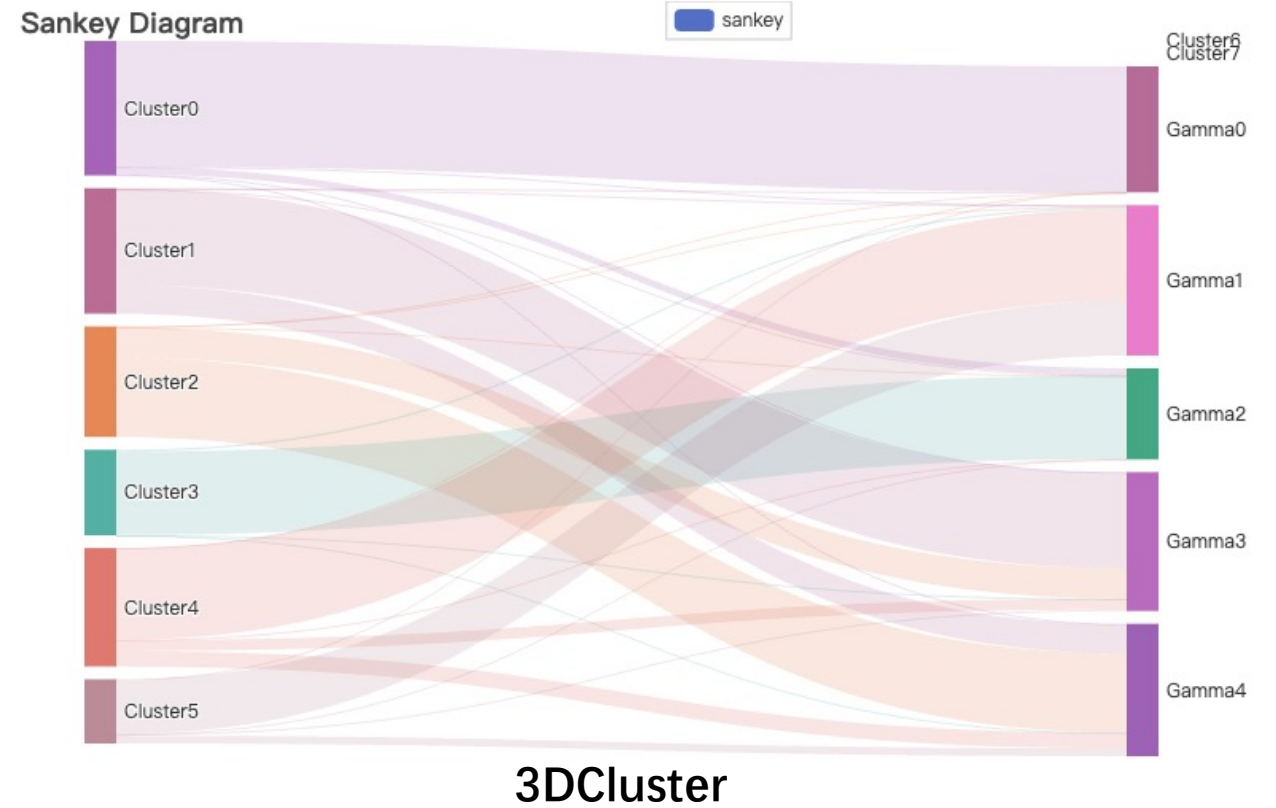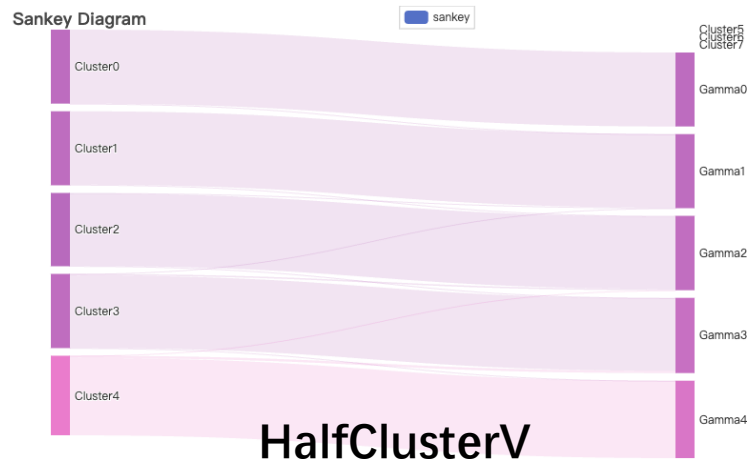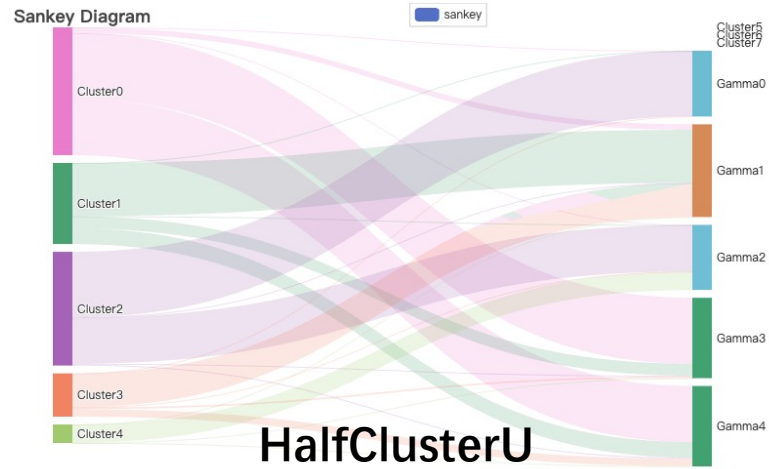# Truth reconstruction

- **Performance check: pseudo-jet:**
  - 5 photons in $\theta \times \phi \in 20° \times 20°$ region, E=5GeV
  - Turn off one part of real-rec algorithm (truthXXX), others are fully reconstructed.

Truth reconstruction

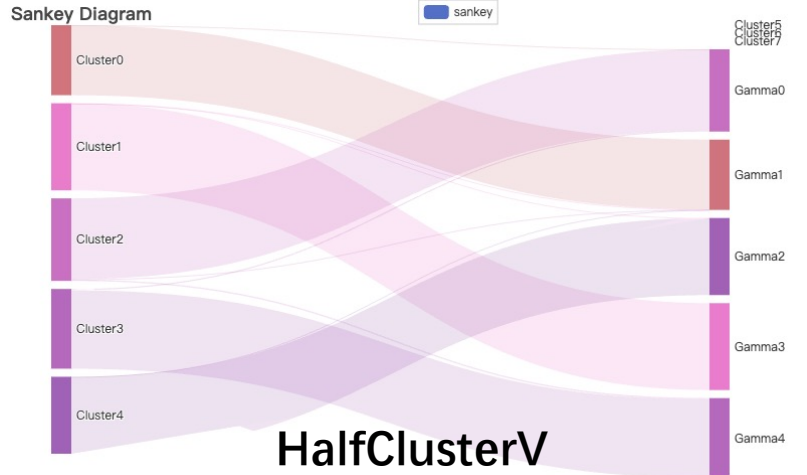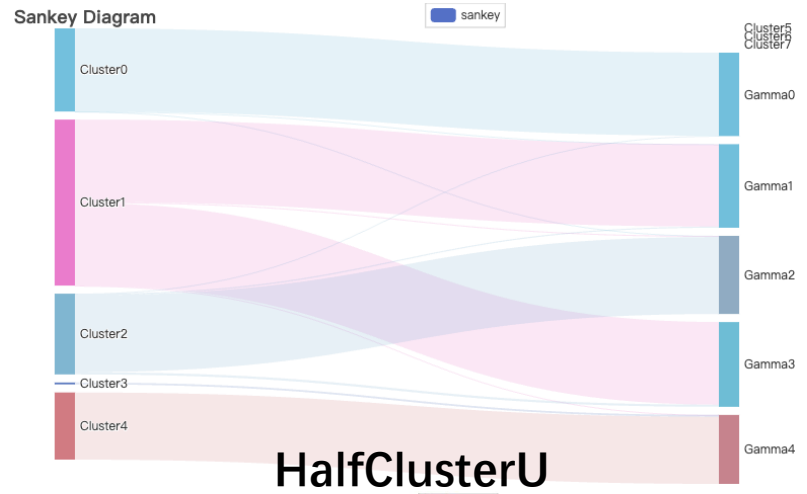- **Sankey diagram for Evt #0**

Truth reconstruction

- **Sankey diagram for Evt #1**