Performance check

中国科学院高能物理研究所
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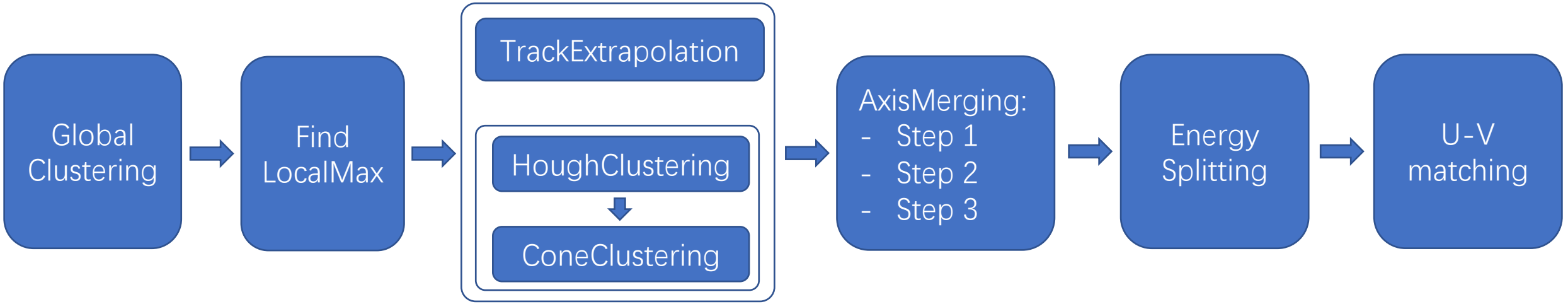
Performance check

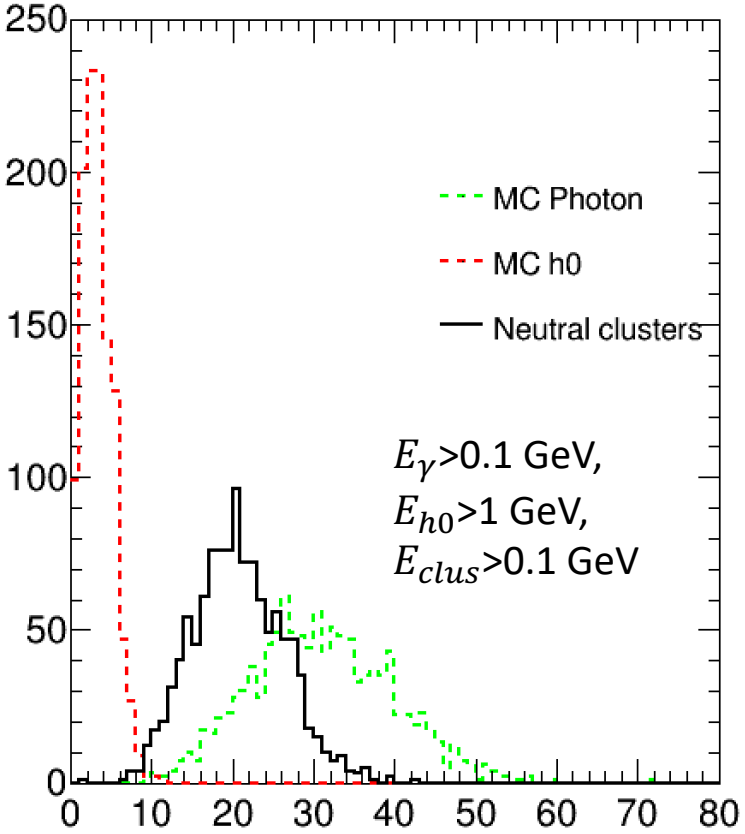
- **Reconstruction flow:**



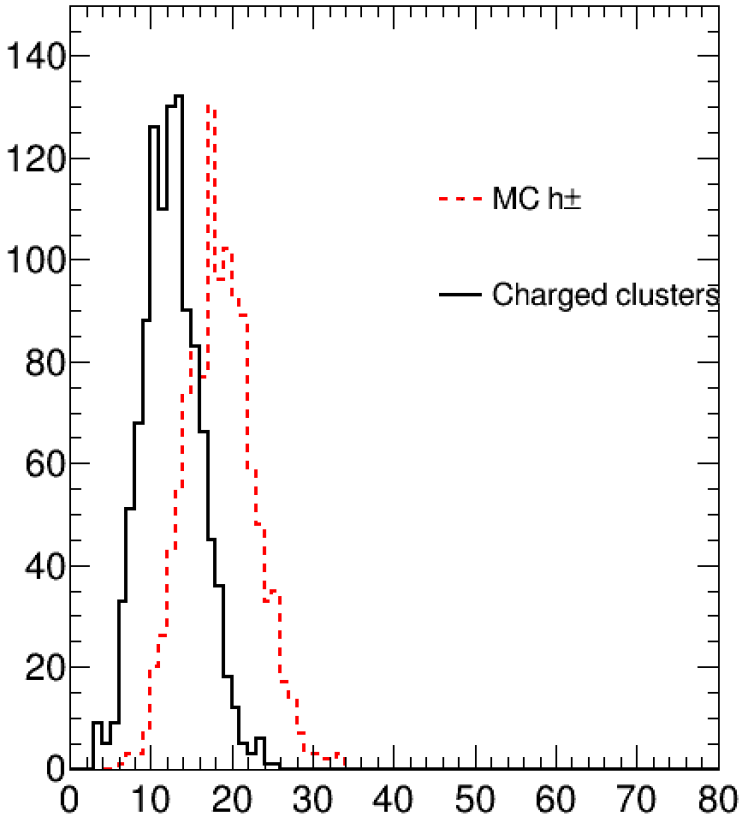
Performance check

- **Physics event $e^+e^- \rightarrow ZH \rightarrow \nu\nu gg$**
  - MC particle vs. clusters: multiplicity

#Neutral cluster

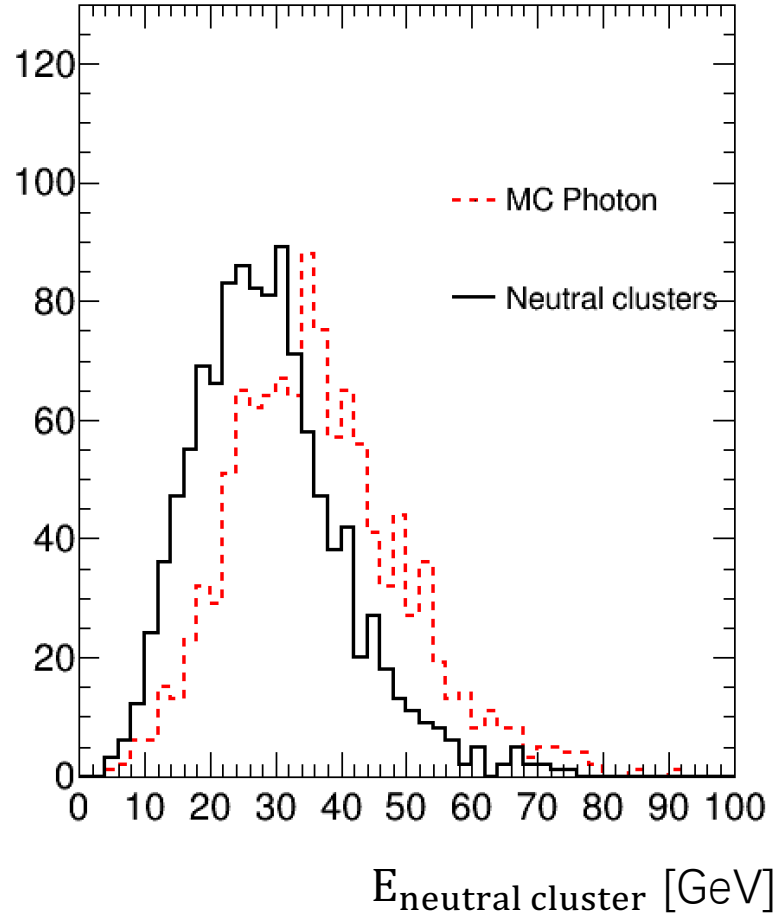


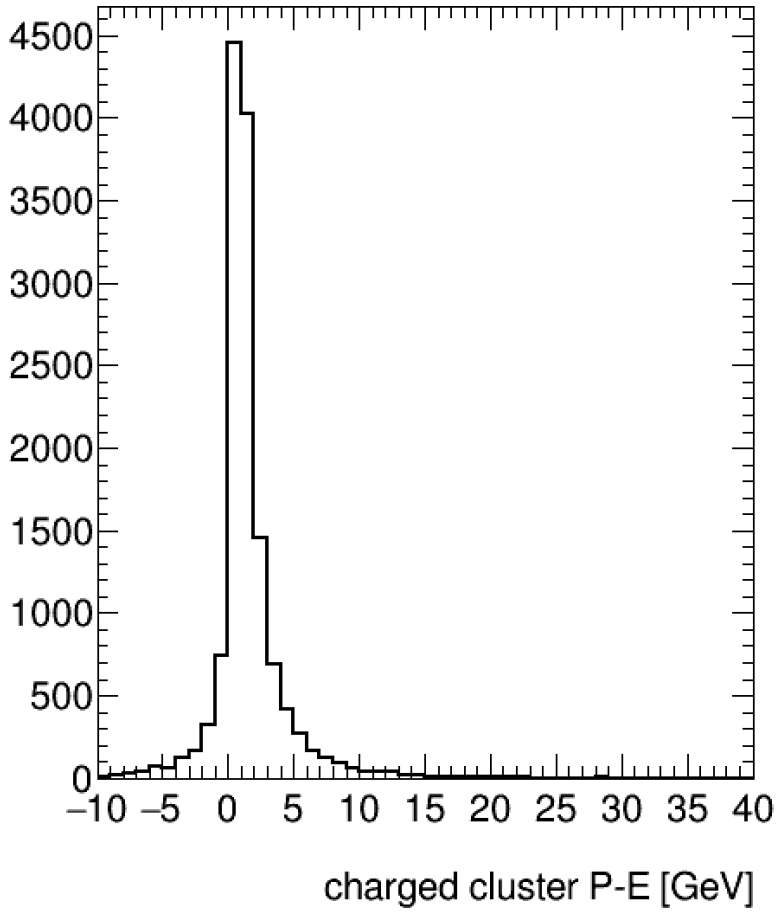
#Charged cluster (Pt>0.1GeV)



Performance check

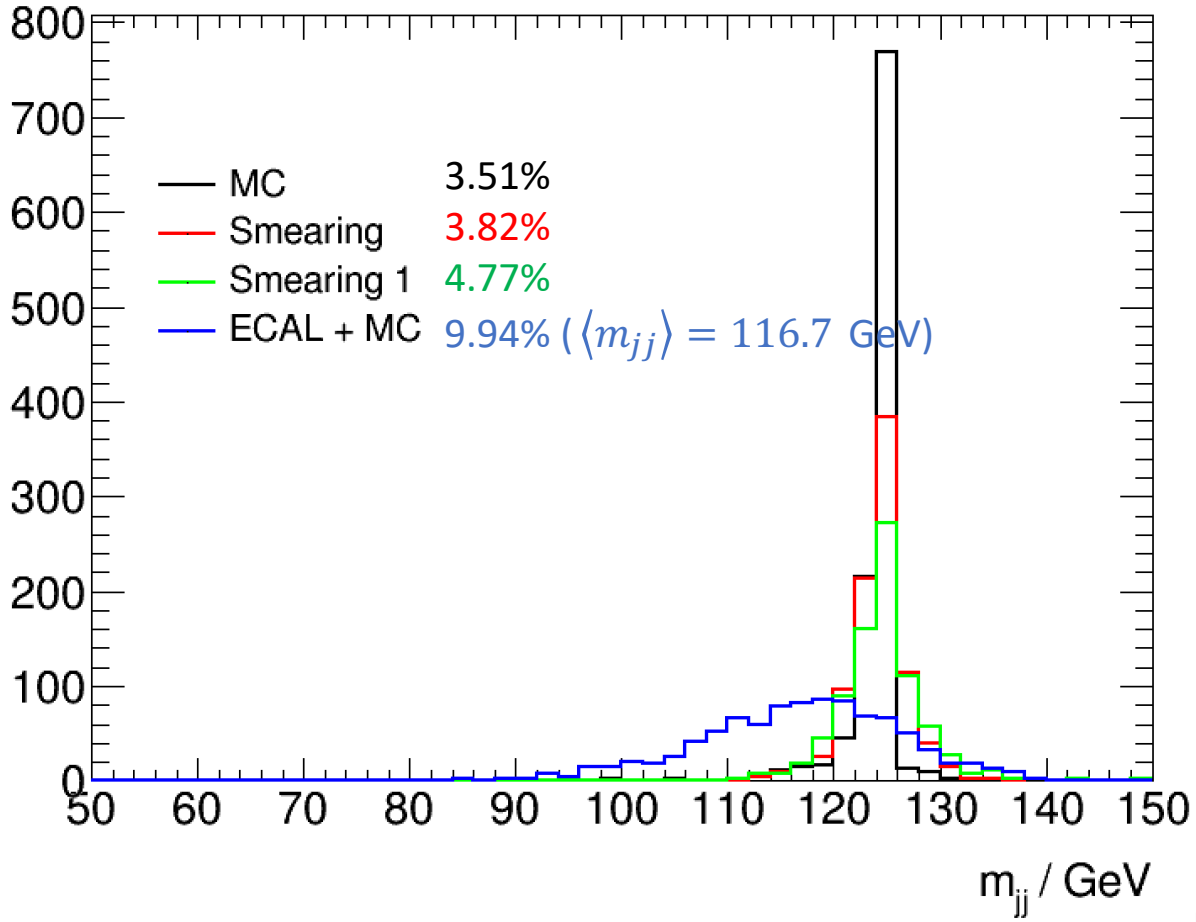
- **Physics event $e^+e^- \rightarrow ZH \rightarrow \nu\nu gg$**
  - MC particle vs. clusters: energy





Performance check

- **Physics event $e^+e^- \to ZH \to \nu\nu gg$**
  - BMR: 9.94% (StdDev. not fit).



MC:
all visible MC particles, E_γ>0.1 GeV, E_{h0}>1 GeV.

Smearing:
MC $h^\pm$ + 3% smeared γ + 60% smeared h^0

Smearing1:
MC $h^\pm$ + 3% smeared γ + 100% smeared h^0

ECAL+MC:
MC $h^\pm$+ 60% smeared h^0+ECAL neutral clusters

Performance check

- **Next step before Edinburgh:**
  - BMR decouple (follow Yuexin's work)

Term		CEPC-v4	4th Det.
Intrinsic	Acceptance		
	Threshold		
	Energy resolution		
	Position resolution		
Confusion	Shower overlap		
	Nearby separation		
	Neutral fragment		
	Bar ambiguity		

  - Update BMR after some debugging.

二、粒子流重建算法中误差源的拆解分析与模型构建

- 基线结果复现
  - 基本复现出基线全模拟BMR ~3.8%
  - 影响因素占比
    - 最大：带电强子碎裂簇团
    - 次之：强子能量分辨率
  - 为探测器和粒子流重建算法的优化提供方向：
    - 强子簇射重建算法
      - 碎裂簇团的鉴别
      - 与带电径迹的匹配
    - 提高强子能量分辨率
      - 强子量能器几何参数
      - 能量重建算法