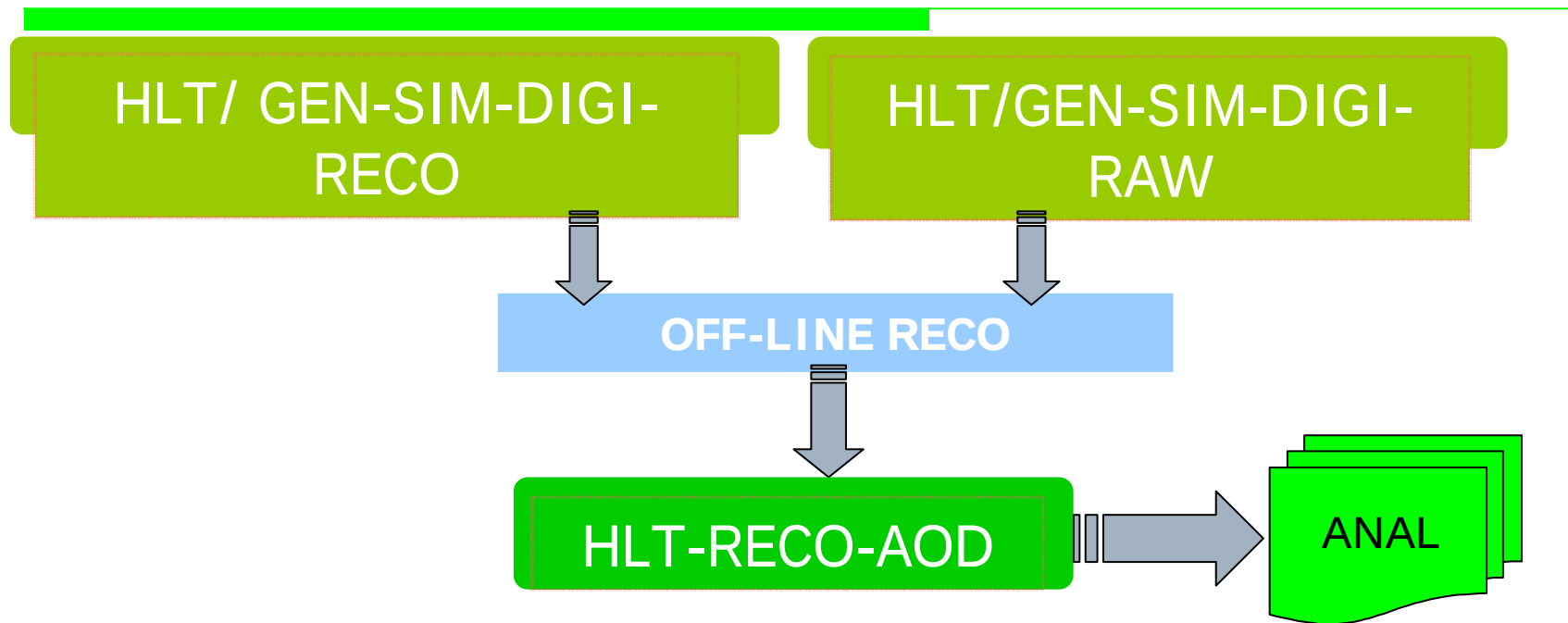


Data flow via SW_I_6_io



	avail/tot	jobs	Evts	pb-1
☐ Inclusive b:	45(52)/56	~420k/520k	~11/13.5	
☐ p-JPsi:	29(36)/40	~720k/1M	~2.4/3	
☐ QCD ppmuX:	42(60)/208	~4.2M/20.8M	~0.1/0.45	

Muons

Muon collections (in [RECO](#) only)

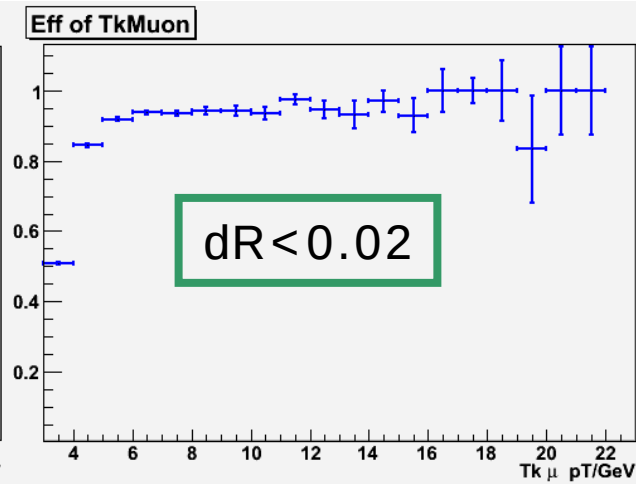
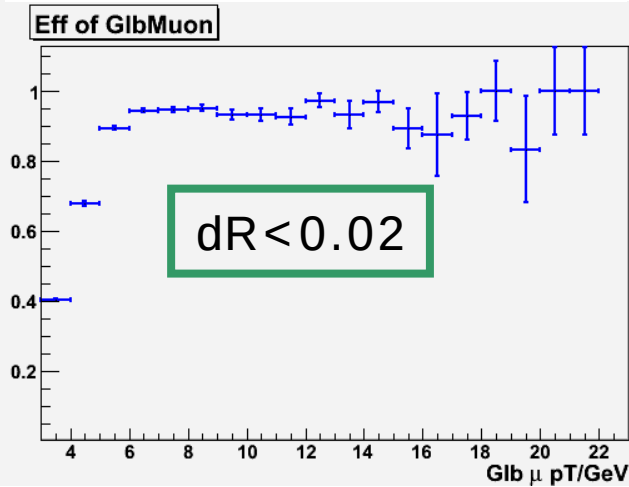
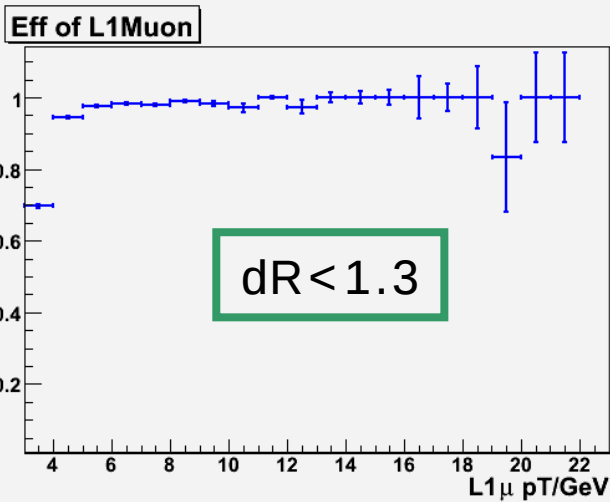
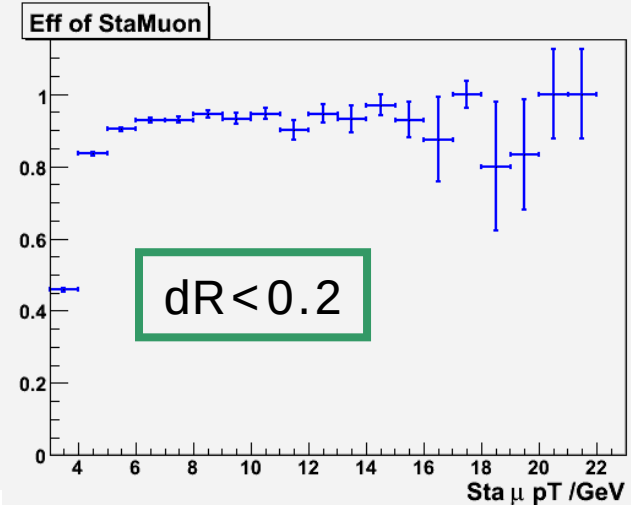
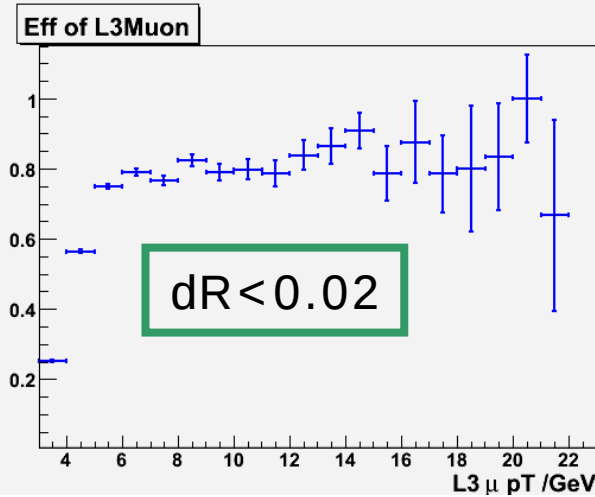
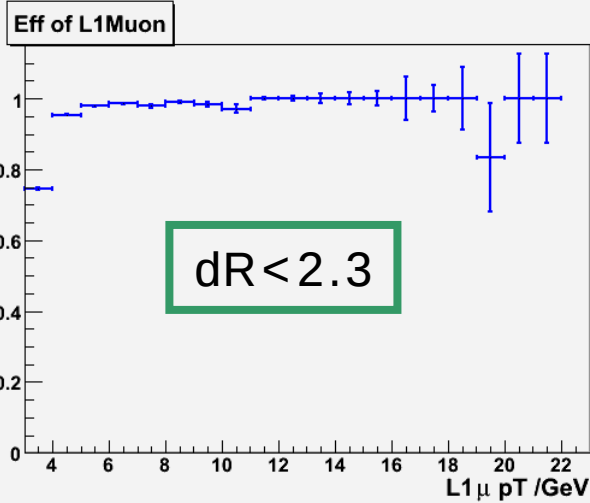
standAloneMuons	reco::TrackCollection	Stand Alone tracks without extra and hits
standAloneMuons:UpdatedAtVtx	reco::TrackCollection	Stand Alone tracks without extra and hits, with constraint at the beam spot
globalMuons	reco::TrackCollection	Global tracks without extra and hits
muons	reco::MuonCollection	Muons built using global track with energy deposits
trackerMuons	reco::MuonCollection	Muons built racker track with energy deposits

Muons (CNT)

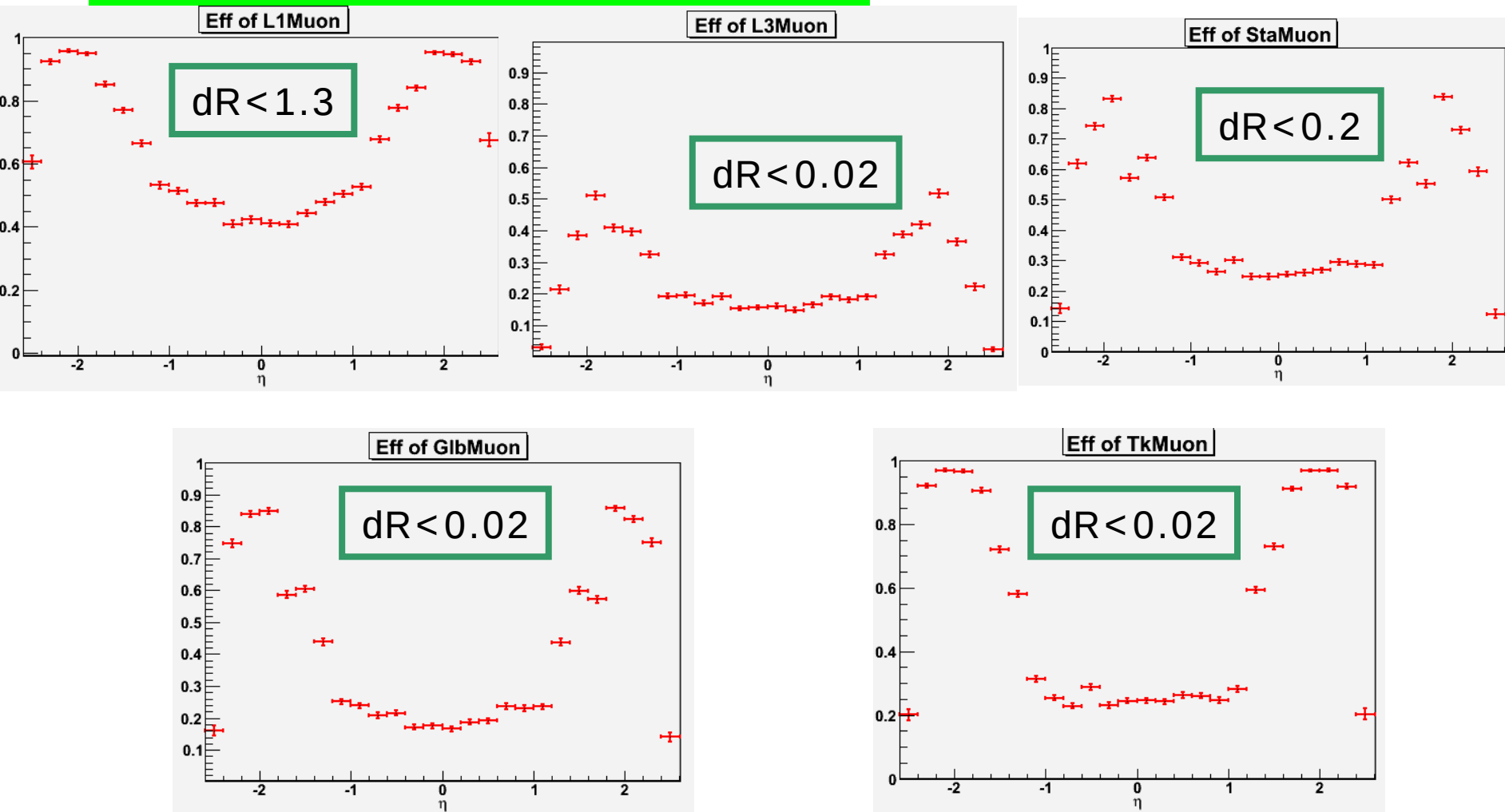
Muon collections (in [RECO](#) and [AOD](#))

standAloneMuons	reco::TrackCollection	Stand Alone tracks without extra and hits
standAloneMuons:UpdatedAtVtx	reco::TrackCollection	Stand Alone tracks without extra and hits, with constraint at the beam spot
globalMuons	reco::TrackCollection	Global tracks without extra and hits
muons	reco::MuonCollection	Muons built using global track with energy deposits and isolation information
trackerMuons	reco::MuonCollection	Muons built using tracker track with energy deposits, isolation information and muon segment matching

L_1 , $L_1^*L_3$, Sta, Glb & Tk: muon Eff. vs. p_T



L_1 , $L_1^*L_3$, Sta, Glb & Tk: muon Eff. vs. η



Efficiency Measurements

- The overall dimuon efficiencies of the measurement are assumed to be the product of several parts

$$\mathcal{E} = \mathcal{E}_{\text{acceptance}} \times \mathcal{E}_{\text{trigger}} \times \mathcal{E}_{\text{offline}}^2$$

$$\mathcal{E}_{\text{trigger}} = \mathcal{E}_{\text{L1}} \times \mathcal{E}_{\text{HLT}}$$

$$\mathcal{E}_{\text{offline}} = \mathcal{E}_{\text{global}} \times \mathcal{E}_{\text{isolation}} \times \mathcal{E}_{\text{id}}$$

$$\mathcal{E}_{\text{global}} = \mathcal{E}_{\text{standalone}} \times \mathcal{E}_{\text{tracker}} \times \mathcal{E}_{\text{matching}}$$

- Choose a *tag* muon
 - A “high quality” reconstructed muon
- Choose a *probe* track
 - A probable muon in tracker or muon system
- Requiring $M_{\mu\mu}$ consistent with $M_{J/\Psi}$ yields a high-purity and almost unbiased sample of *probe* muons

Description of TAG and PROBE

TAG	Global muon with $p_T > 5\text{GeV}$ Associated to a L3 muon
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Probe Type	Description
<u>G</u> olden	Global muon that is also a TAG
<u>M</u> atched	Global muon that is not a TAG
<u>U</u> nmatched	Tracker track AND Standalone muon found, but they are not associated with a Global Muon
<u>T</u> racker Only	Only a tracker track
<u>S</u> tand Alone Muon	Only a standalone muon

With the five types of probes, we get five combinations of tag-and-probe: GG, GM, GU, GS, GT

Tracking and Matching Efficiencies

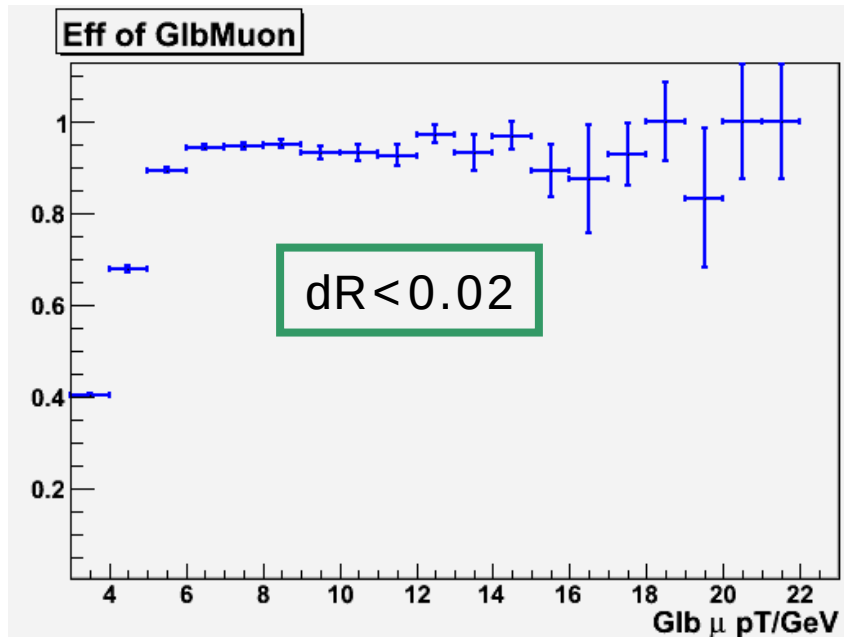
- Standalone, Tracking, and Matching efficiencies calculated with simple event counting

$$\mathcal{E}_{\text{standalone}} = \frac{2N_{GG} + N_{GM} + N_{GU}}{2N_{GG} + N_{GM} + N_{GU} + N_{GT}}$$

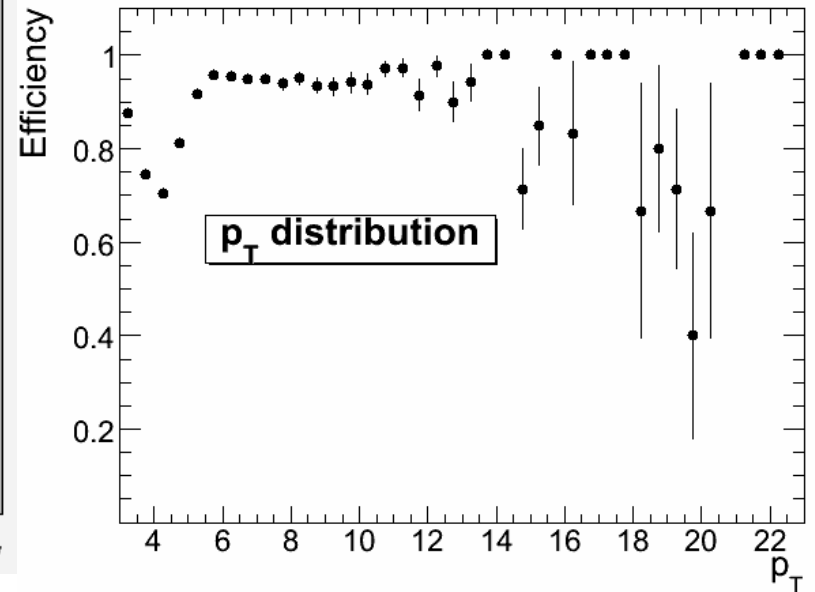
$$\mathcal{E}_{\text{tracker}} = \frac{2N_{GG} + N_{GM} + N_{GU}}{2N_{GG} + N_{GM} + N_{GU} + N_{GS}}$$

$$\mathcal{E}_{\text{matching}} = \frac{2N_{GG} + N_{GM}}{2N_{GG} + N_{GM} + N_{GU}}$$

Glb Muon efficiency: Preliminary



M.C. Truth



Tag&Probe

TrackTrackAssociator $dR < 0.2$