

Table of Contents

Physics Object Reconstruction.....	1
Introduction.....	1
Tracking.....	1
Primary Vertex reconstruction.....	1
Clusters and superclusters.....	1
Photons.....	1
Electrons.....	1
Muons.....	1
Particle Flow.....	1
Jets.....	2
b tagging.....	2
tau tagging.....	2
MET.....	2
Review status.....	2

Physics Object Reconstruction

Complete: 

Introduction

Physics object are delivered by Fast Simulation in the exact same format as in the complete reconstruction. Please refer to the official physics object documentation if you want to use them. This page enumerates the status of physics object reconstruction in Fast Simulation.

Tracking

Tracks seeding and track candidate building is different in the Fast Simulation from what is done in the complete reconstruction. Indeed, by default, no pattern recognition is performed (as it would be CPU-time prohibitive). Hits associated to a given simulated track undergo an emulation of the seeding algorithms and are grouped together to form a Track Candidate. The track fitting uses the complete-reconstruction algorithm, with tuned outlier rejection to emulate the pattern recognition.

The combinatorial track finder (with pixel seeds and mixed seeds) is available since CMSSW160 onwards. The Pixel Tracks are available from CMSSW170 onwards. The Iterative tracking is available from CMSSW180 onwards. An extensive documentation of the fast simulation specificities can be found [here](#).

Primary Vertex reconstruction

The primary vertices are reconstructed in the exact same way as in the complete reconstruction, from any of the track collections mentioned above.

Clusters and superclusters

Basic clusters, super clusters and particle flow clusters are available since CMSSW150.

Photons

Photons built from the above clusters are available since CMSSW160

Electrons

Pixel matched GSF electrons available since CMSSW160.

Muons

Parametrized muons available since 150. Specific documentation can be found [here](#). The muons can also be fully reconstructed from RecHits in the muon chambers available. Specific documentation on how the muon SimHits are simulated can be found [here](#). Normal sequences for digis, rechits, segments, and muon reconstruction are the same as the complete reconstruction from this point onwards.

Particle Flow

Available since CMSSW150

Jets

Calo jets, particle flow jets and gen jets available since CMSSW160

b tagging

Available since CMSSW150

tau tagging

Calo taus and particle flow taus available since CMSSW160.

MET

Calo MET available since CMSSW160

Review status

Reviewer/Editor and Date (copy from screen)	Comments
PatrickJanot - 07 February 2008	Was about time to update all physics object status (now all available)
PatrickJanot - 18 June 2007	Add a link to the tracking and muon documentation pages.
FlorianBeaudette - 17 June 2007	Add basic documentation for Jet and MET.
JennyWilliams - 23 Mar 2007	created template page

Responsible: AndreaGiammanco

Last reviewed by: Reviewer

This topic: CMSPublic > SWGuideFastSimPhysObjReco

Topic revision: r6 - 2011-12-13 - AndreaGiammanco



Copyright &© 2008-2020 by the contributing authors. All material on this collaboration platform is the property of the contributing authors.

Ideas, requests, problems regarding TWiki? Send feedback