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# The Trimmed Kalman vertex reconstructor

Complete: 

## Overview

The Trimmed Kalman vertex reconstructor iteratively uses the Trimmed Kalman vertex fitter to find and fit interaction vertices. After each fitted vertex, the remaining tracks are re-used to search for further vertices.

The fitter is implemented in the package `RecoVertex/TrimmedKalmanVertexFinder` [↗](#)

## Usage

An easy way to use the TKVF is through the `KalmanTrimmedVertexFinder`. It uses a conventional Kalman filter to fit the vertices, without the user having to specify anything. It is then used like any other `VertexReconstructor`.

```
KalmanTrimmedVertexFinder finder;  
vector<TransientVertex> vertices = finder.vertices ( vector<TransientTrack> tracks );
```

## Parameters

To change the parameters, the easiest is to use the `setParameters (ParameterSet)` method. Alternatively, individual set methods can be used. The PSet needed is the following:

```
GSFParameters = cms.PSet (  
  ptCut = cms.double(0.0),  
  vtxFitProbCut = cms.double(0.01),  
  trackCompatibilityToPVcut = cms.double(0.05),  
  trackCompatibilityToSVcut = cms.double(0.01),  
  maxNbOfVertices = cms.int32(0)  
)
```

The parameters are the following:

| Parameter Name            | Description  | Default | method                            |
|---------------------------|--|---------|-----------------------------------|
| ptCut                     | the minimum pT (in GeV) of the tracks used to make vertices.   | 1.5     | setPtCut(float)                   |
| trackCompatibilityToPVcut | the probability below which a track is considered incompatible with the 1st vertex candidate formed.   | 0.05    | setTrackCompatibilityCut(float)   |
| trackCompatibilityToSVcut | the probability below which a track is considered incompatible with the next vertex candidates formed. | 0.01    | setTrackCompatibilityToSV(float)  |
| vertexFitProbabilityCut   | the probability below which a vertex is rejected   | 0.01    | setVertexFitProbabilityCut(float) |
| maxNbOfVertices           | the maximum number of vertices searched for. 0 means no limitations                                    | 0       | setMaxNbOfVertices(int)           |

-- Main.speer - 05 Jul 2007

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