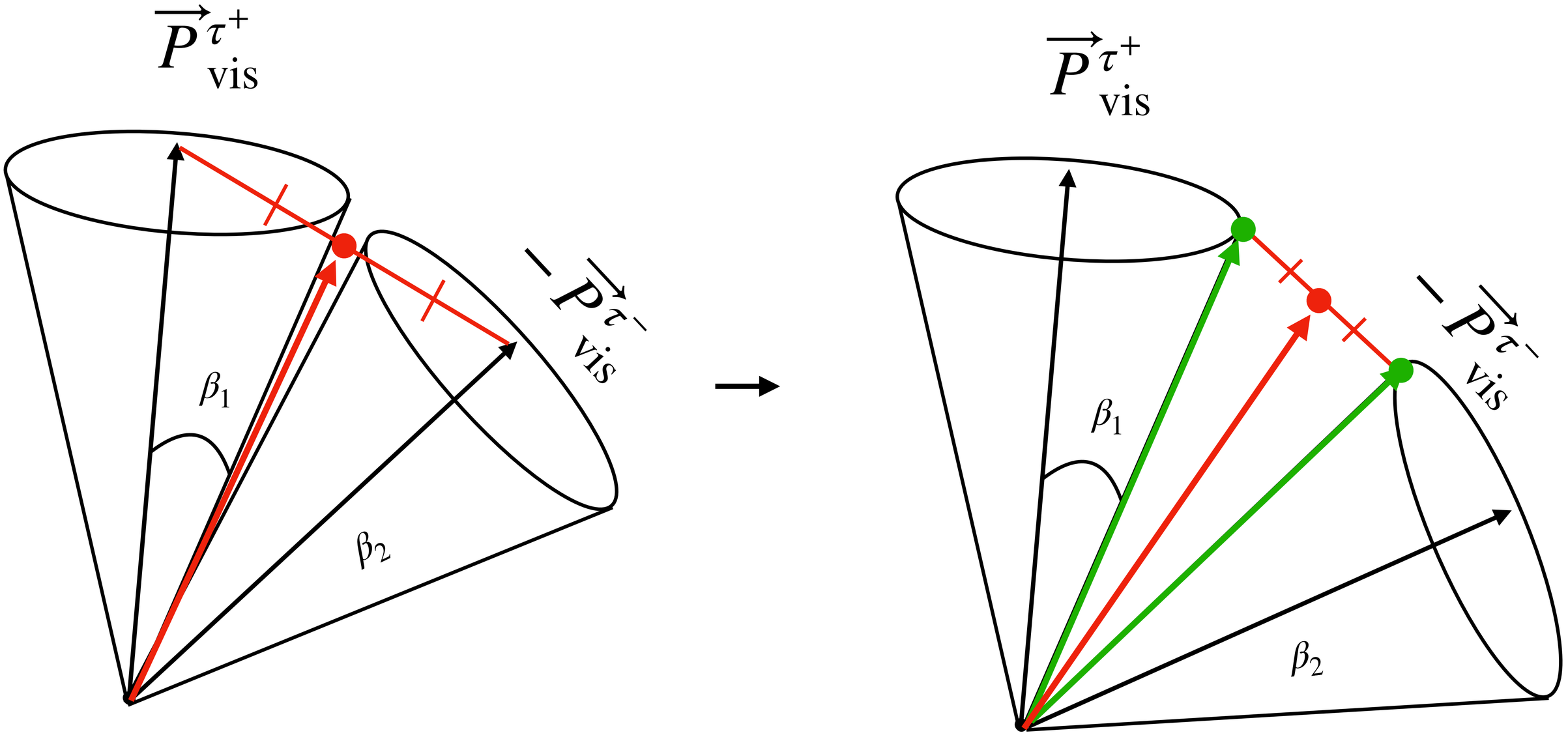
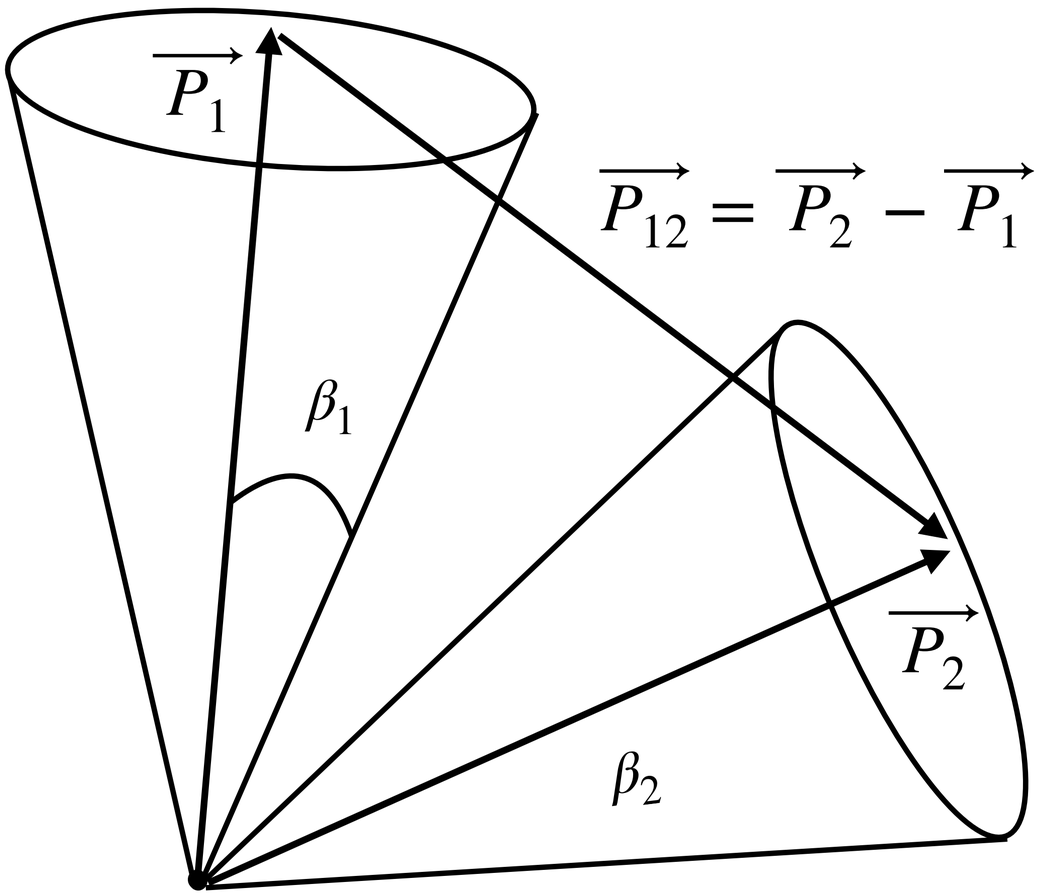
"Midpoint method"

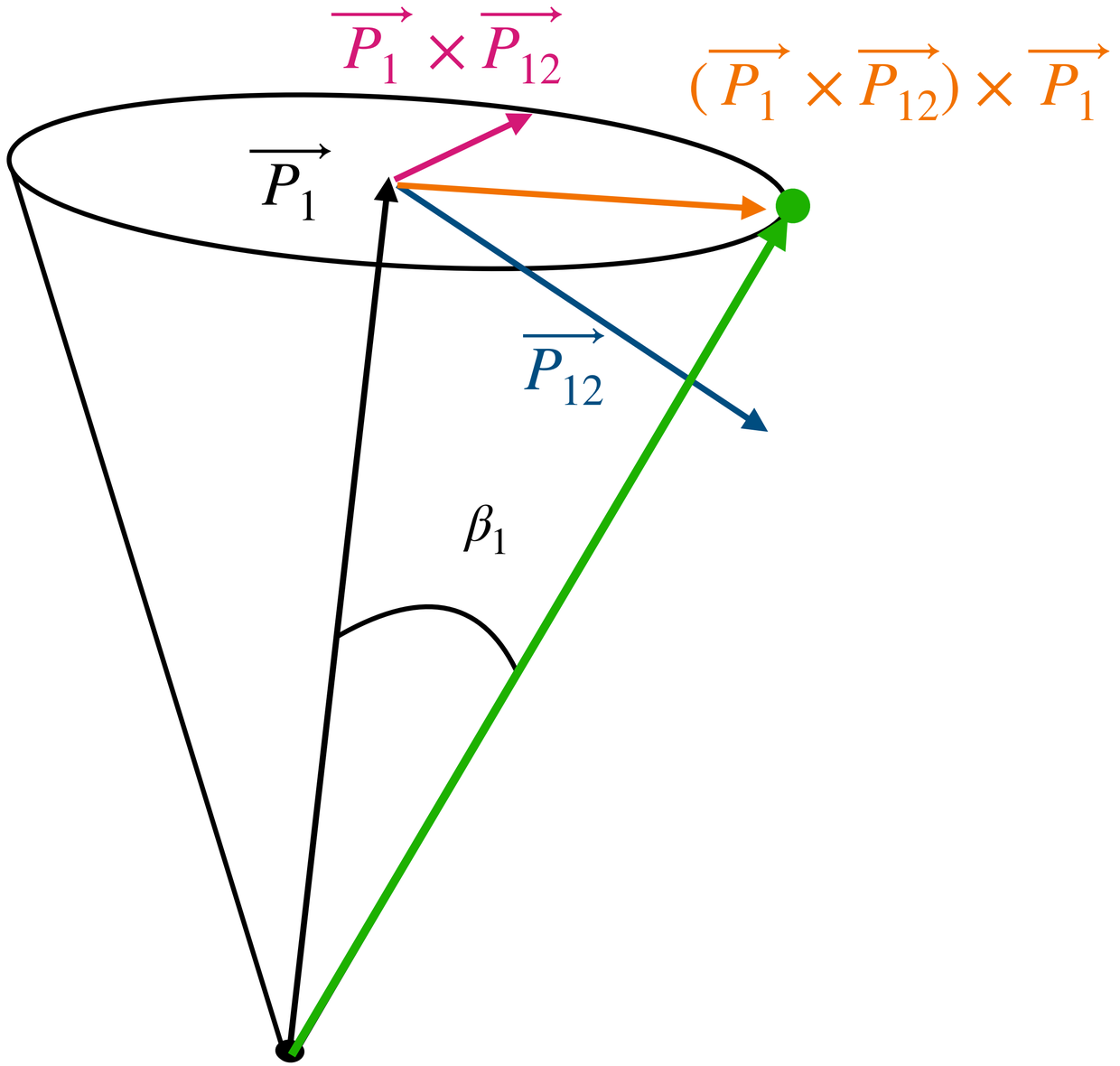
take a midpoint of visible daughters

take a midpoint of cone surface
and use this new vector as a solution



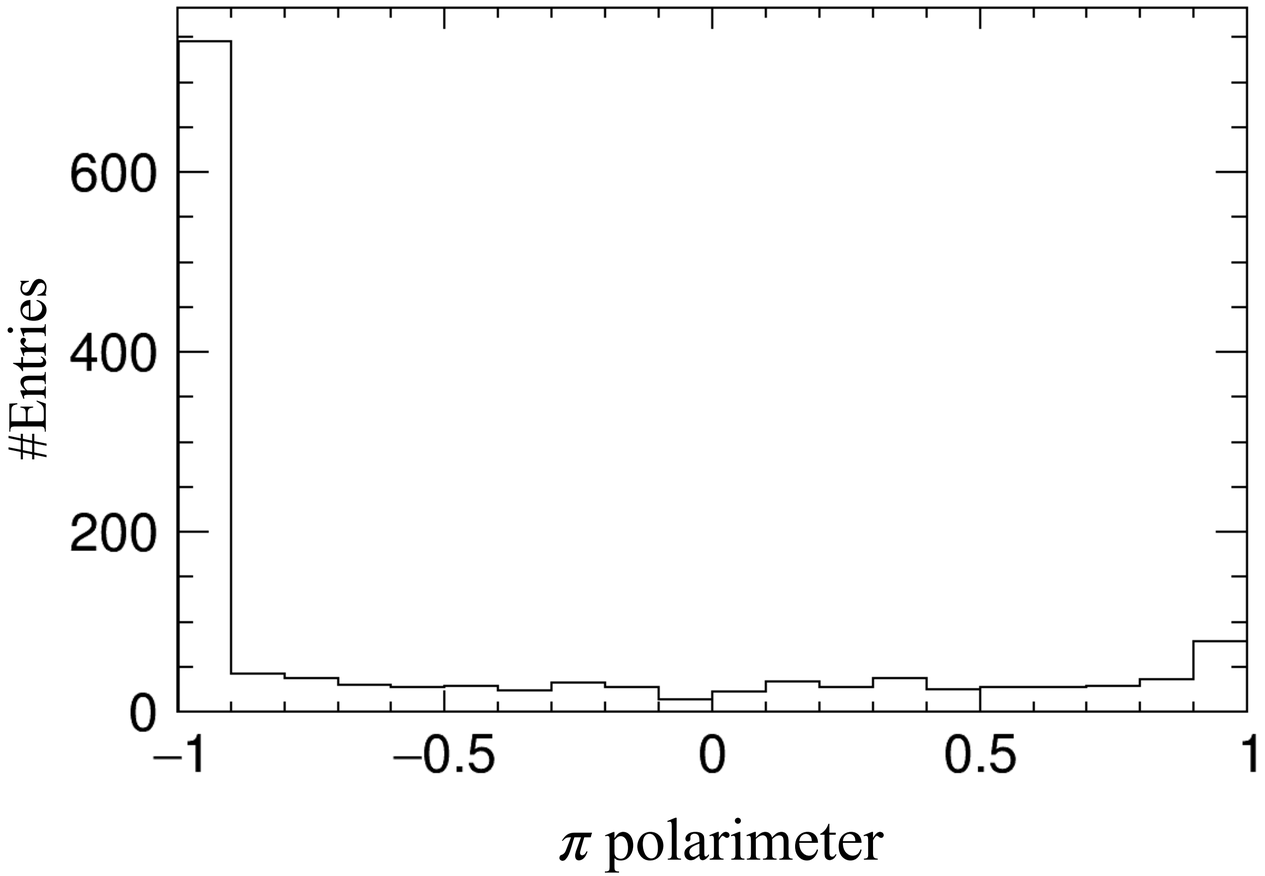


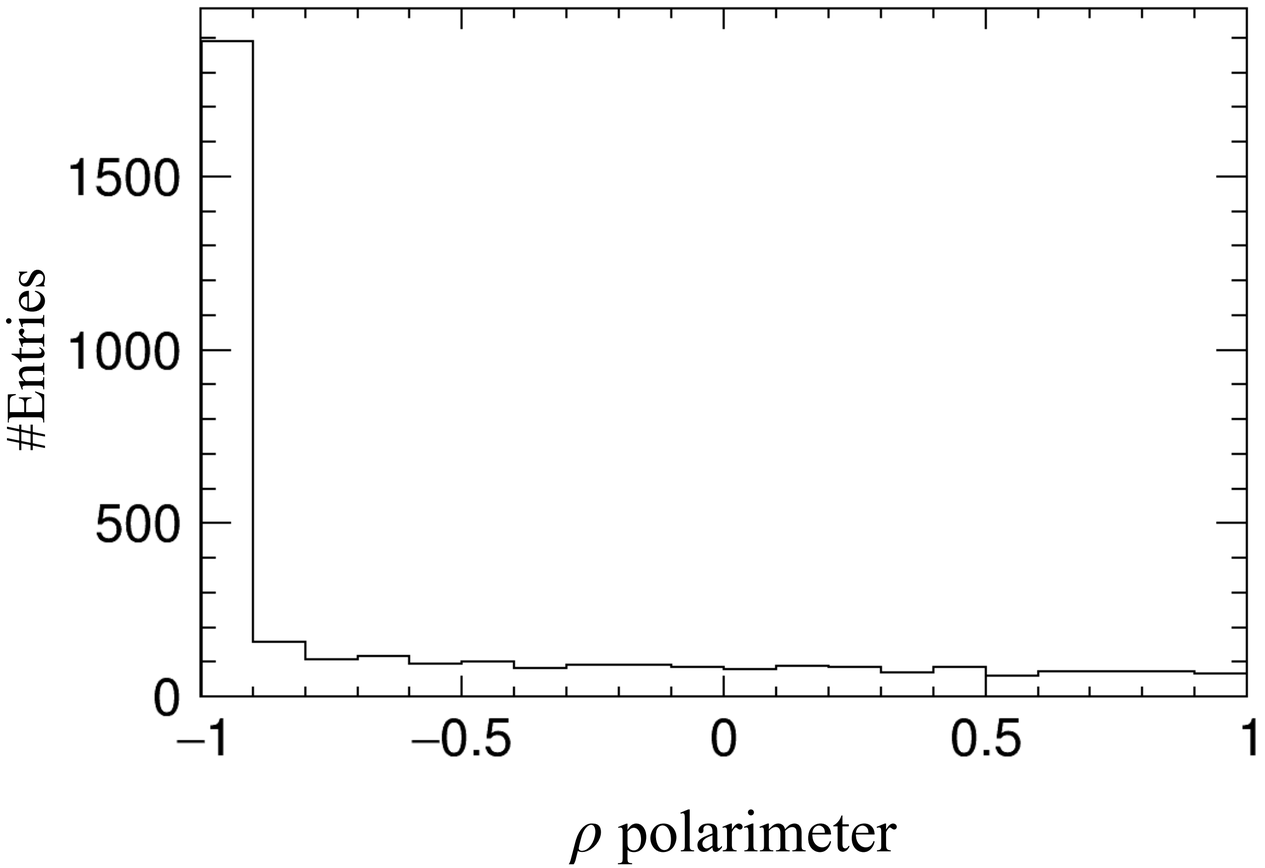

$$\overrightarrow{P_{12}} = \overrightarrow{P_2} - \overrightarrow{P_1}$$




$$\text{solution} = \overrightarrow{P_1} + |\overrightarrow{P_1}| \tan\beta_1 \, (\overrightarrow{P_1} \times \overrightarrow{P_{12}}) \times \overrightarrow{P_1}$$

# Polarimeter : Midpoint method




something’s wrong…?

# Plan

- Suehara-san’s request : Tau statistics
- Hidaka-san’s request : polarimeter vector for rho decay
- Midpoint method
- Tau decay mode selection

  IsolatedLeptonTaggingProcessor

```
<!--cosine of the larger cone-->
<parameter name="CosConeLarge" type="float">0.95 </parameter>
<!--cosine of the smaller cone-->
<parameter name="CosConeSmall" type="float">0.98 </parameter>
<!--Cut on the mva output of isolated electron selection-->
<parameter name="CutOnTheISOElectronMVA" type="float">0.5 </parameter>
<!--Cut on the mva output of isolated muon selection-->
<parameter name="CutOnTheISOMuonMVA" type="float">0.5 </parameter>
<!--Directory of Weights for the Isolated Electron MVA Classification-->
<parameter name="DirOfISOElectronWeights" type="string">isolated_electron_weights_woIP </parameter>
<!--Directory of Weights for the Isolated Muon MVA Classification-->
<parameter name="DirOfISOMuonWeights" type="string">isolated_muon_weights_woIP_woYoke </parameter>
<!--Name of the PandoraPFOs collection-->
<parameter name="InputPandoraPFOsCollection" type="string" lcioInType="ReconstructedParticle">PandoraPFOs </parameter>
<!--Name of the Primary Vertex collection-->
<parameter name="InputPrimaryVertexCollection" type="string" lcioInType="ReconstructedParticle">PrimaryVertex </parameter>
<!--flag to select one most like isolated lepton-->
<parameter name="IsSelectingOneIsoLep" type="bool">false </parameter>
<!--Maximum d0 significance for electron-->
<parameter name="MaxD0SigForElectron" type="float">50 </parameter>
<!--Maximum D0 significance for muon-->
<parameter name="MaxD0SigForMuon" type="float">20 </parameter>
<!--Maximum ratio of energy in calorimeters over momentum for electron-->
<parameter name="MaxEOverPForElectron" type="float">1.3 </parameter>
<!--Maximum ratio of energy in calorimeters over momentum for muon-->
<parameter name="MaxEOverPForMuon" type="float">0.3 </parameter>
<!--Maximum Z0 significance for electron-->
<parameter name="MaxZ0SigForElectron" type="float">50 </parameter>
<!--Maximum Z0 significance for muon-->
<parameter name="MaxZ0SigForMuon" type="float">20 </parameter>
<!--minimum ratio of energy in calorimeters over momentum for electron-->
<parameter name="MinEOverPForElectron" type="float">0.5 </parameter>
<!--minimum ratio of energy in ecal over energy in ecal+hcal-->
<parameter name="MinEecalOverTotEForElectron" type="float">0.9 </parameter>
<!--Minimum momentum for electron-->
<parameter name="MinPForElectron" type="float">5 </parameter>
```

```
<!--Minimum momentum for muon-->
<parameter name="MinPForMuon" type="float">5 </parameter>
<!--Name of collection with the selected isolated lepton-->
<parameter name="OutputIsoLeptonsCollection" type="string" lcioOutType="ReconstructedParticle">ISOLeptons </parameter>
<!--Name of the new PFOs collection without isolated lepton-->
<parameter name="OutputPFOsWithoutIsoLepCollection" type="string" lcioOutType="ReconstructedParticle">PandoraPFOsWithoutIsoLep </parameter>
<!--use yoke for muon ID-->
<parameter name="UseYokeForMuonID" type="bool">false </parameter>
<!--use impact parameters-->
<parameter name="UseIP" type="bool">false </parameter>
<!--verbosity level of this processor ("DEBUG0-4,MESSAGE0-4,WARNING0-4,ERROR0-4,SILENT")-->
<!--parameter name="Verbosity" type="string">DEBUG </parameter-->
```