

Track's study

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JINR, Dubna

Physics & MC meeting
16.02.2022

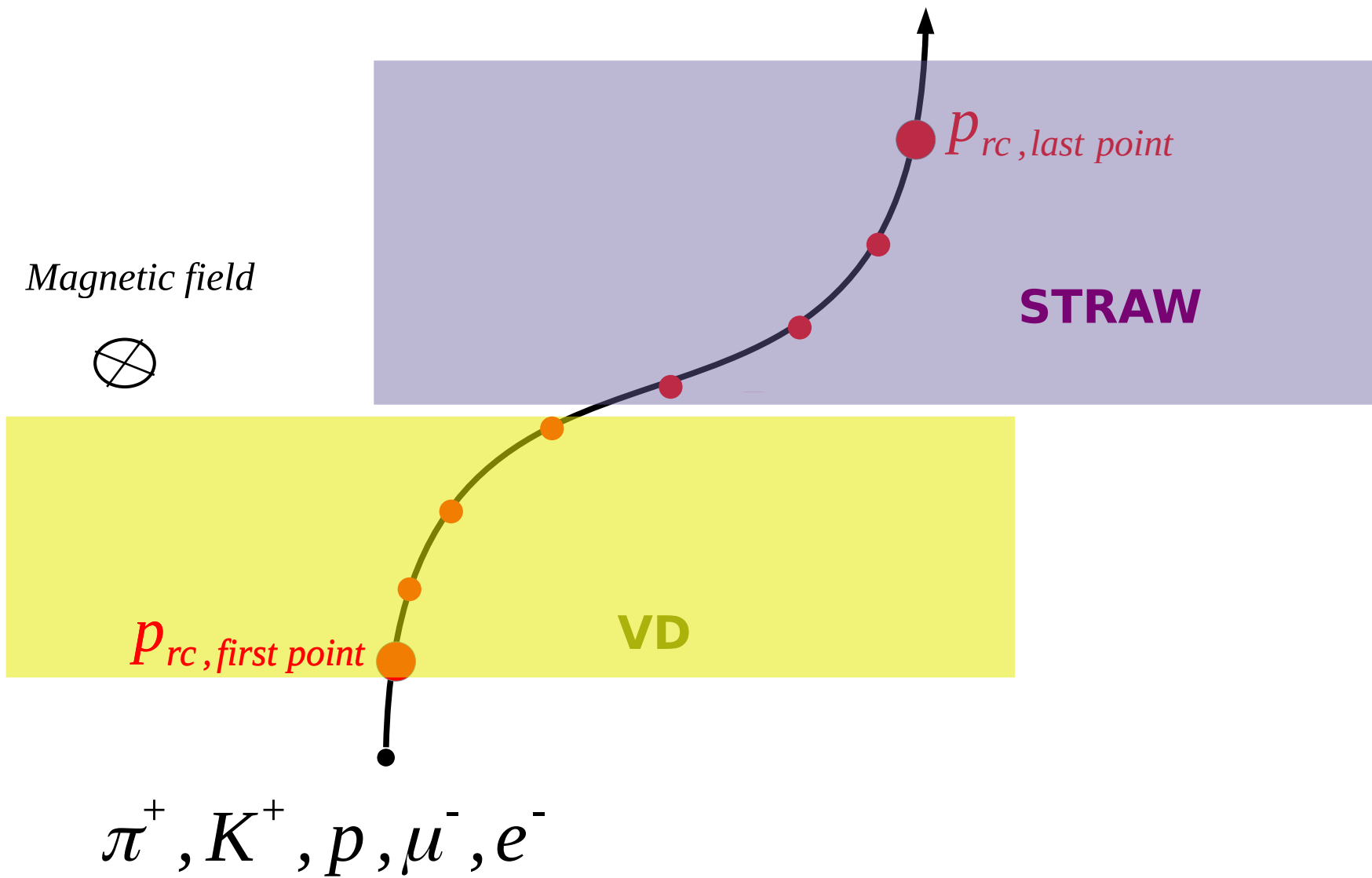
Outline

At the current moment in SpdRoot, GenFit2 uses the exact knowledge about track PDG from MC during fitting procedure.

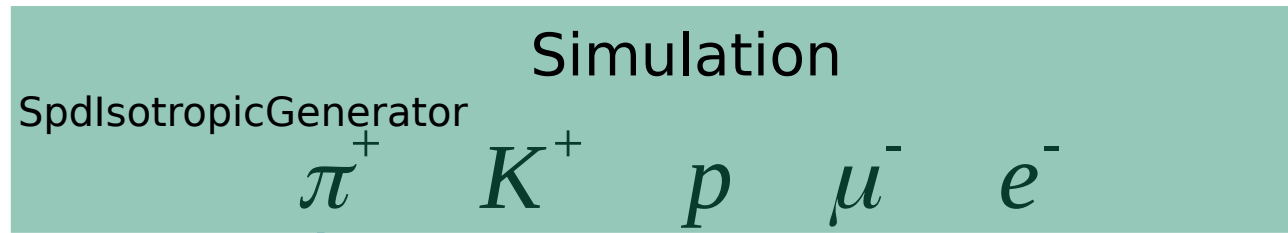
How the wrong PDG will affect the result of the fit?

} -

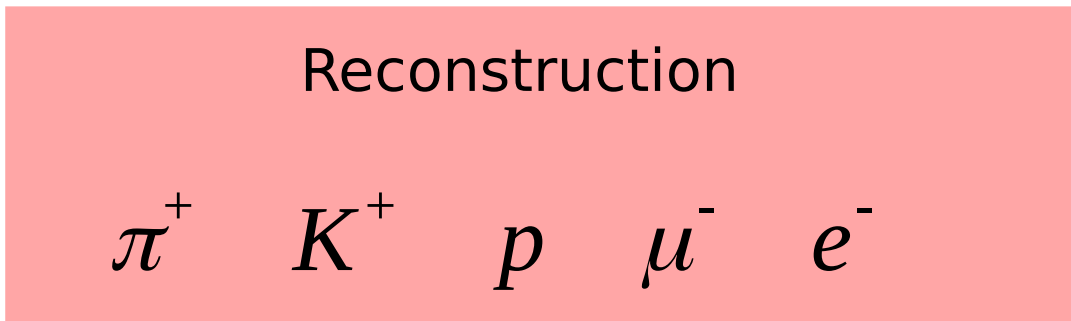
Set-up



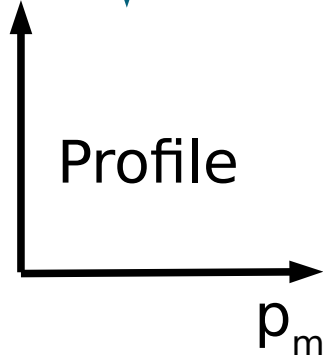
Scheme



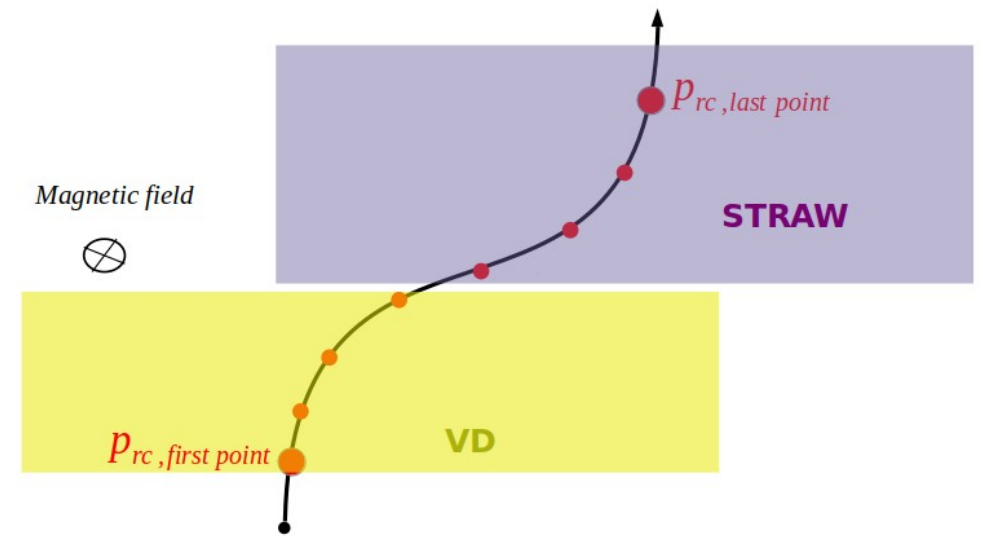
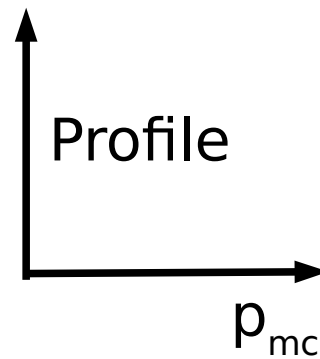
$$p_{min} = 0.1 \text{ GeV}$$
$$p_{max} = 3.5 \text{ GeV}$$
$$p_{step} = 0.1 \text{ GeV}$$



$$p_{mc} - p_{rc, \text{ first point}}$$



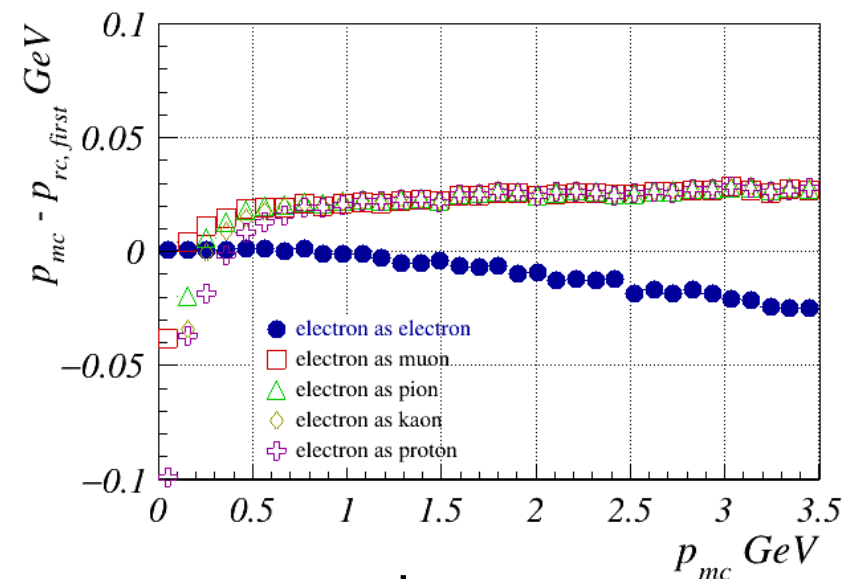
$$p_{mc} - p_{rc, \text{ last point}}$$



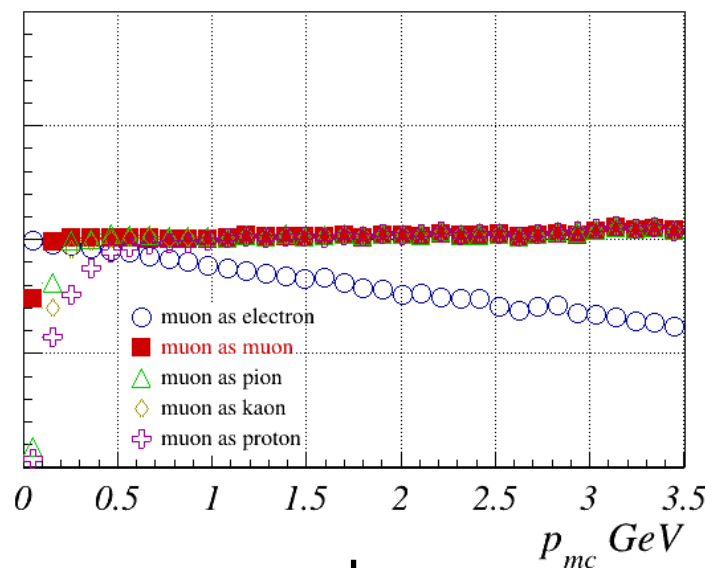
Profile: $p_{mc} - p_{rc, \text{first point}}$

Original material for STRAW and SI

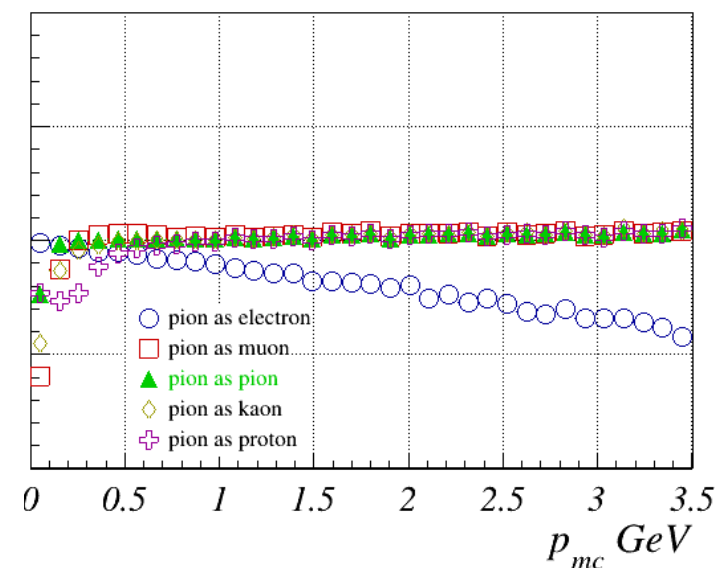
electron



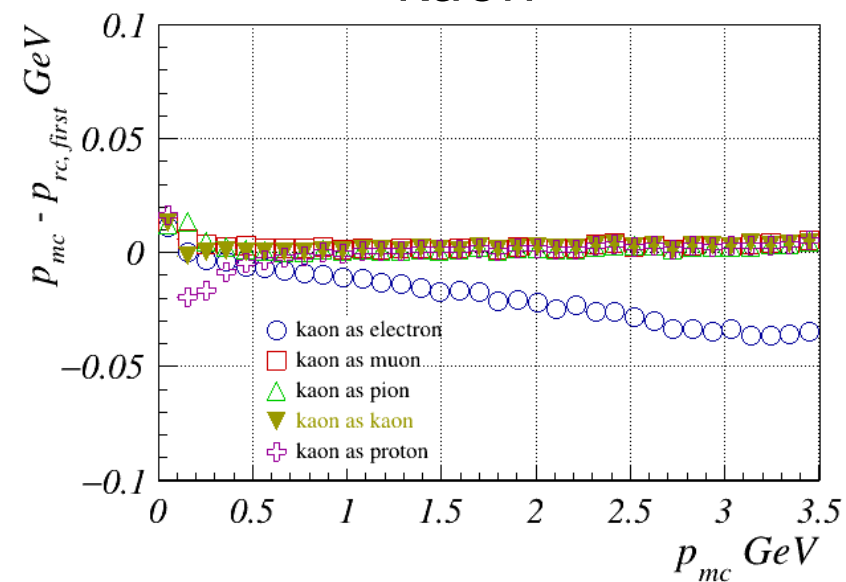
muon



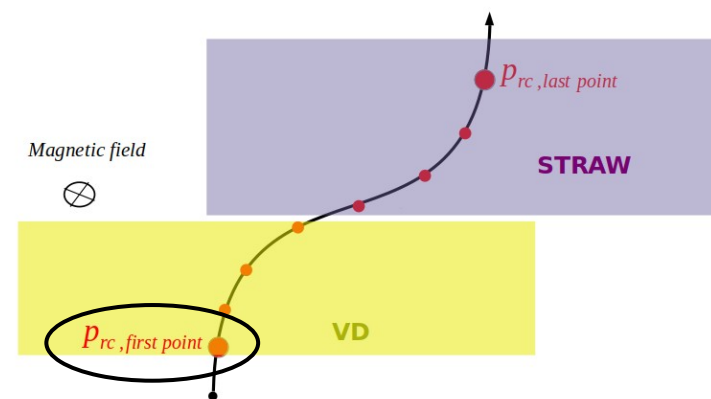
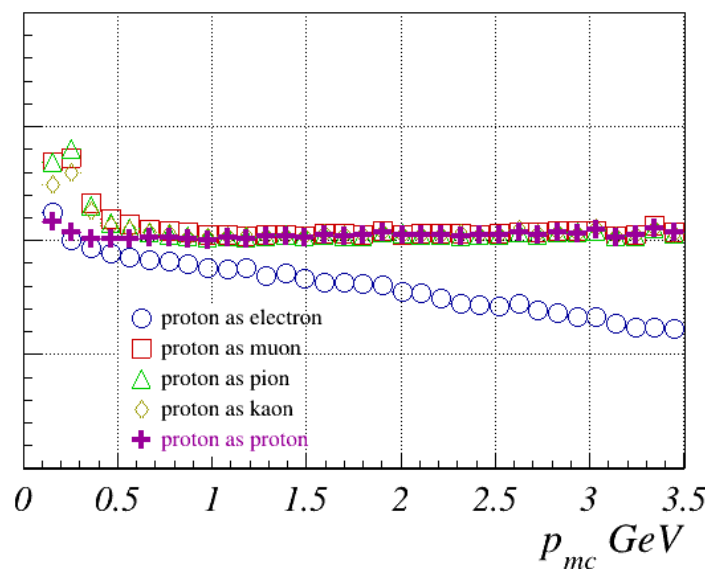
pion



kaon



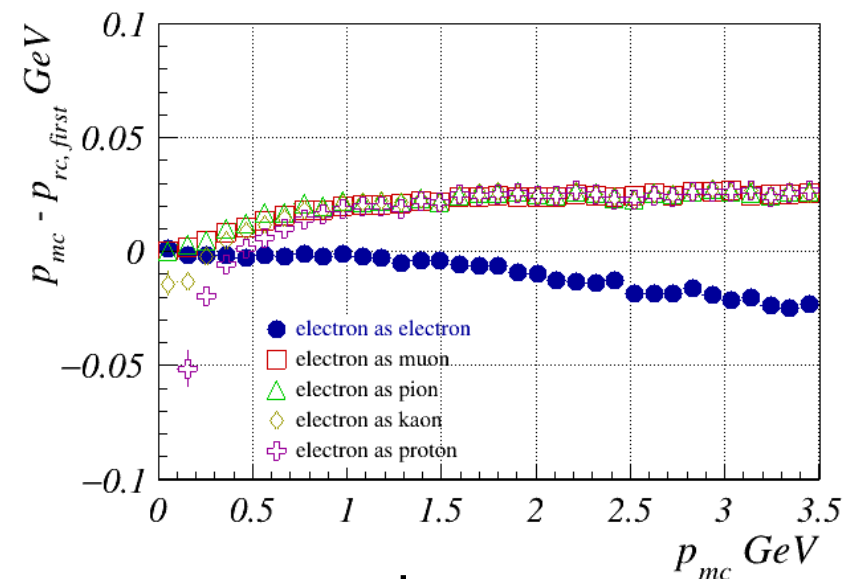
proton



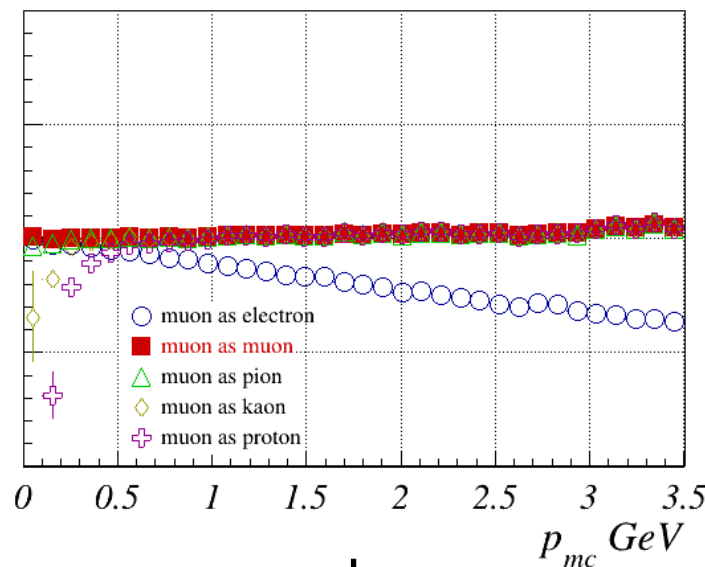
Profile: $p_{mc} - p_{rc, \text{first point}}$

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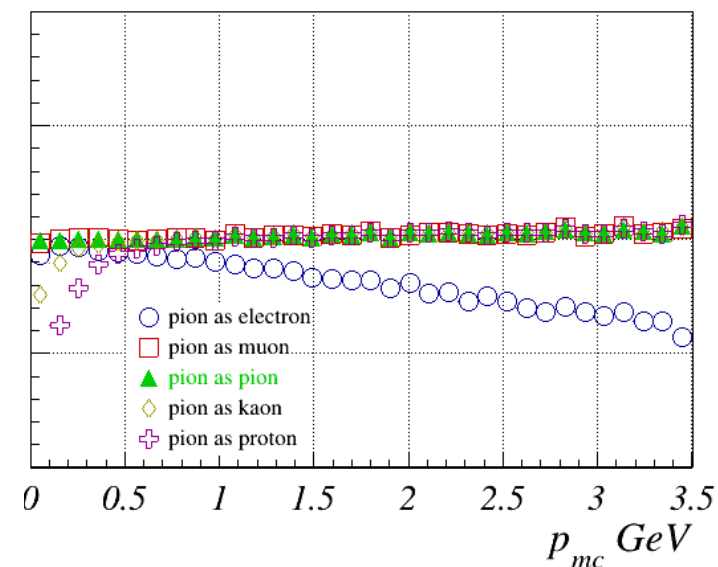
electron



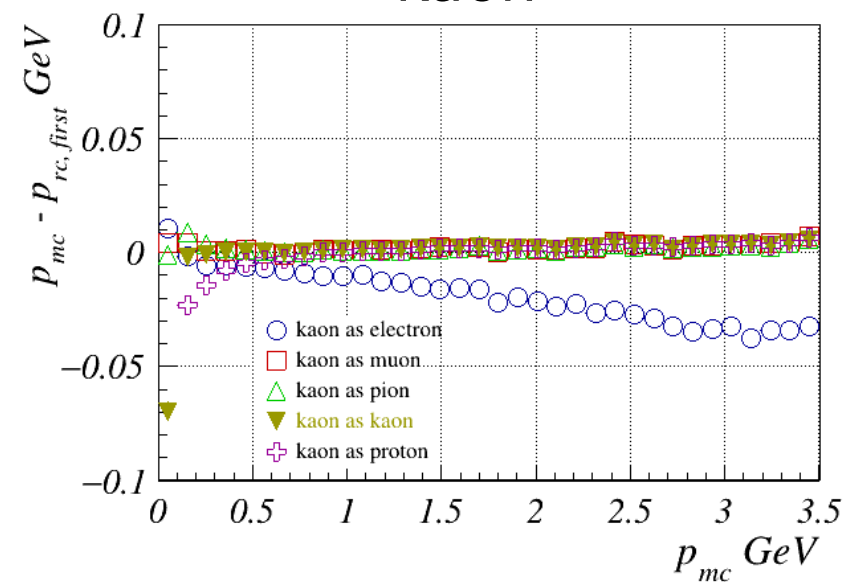
muon



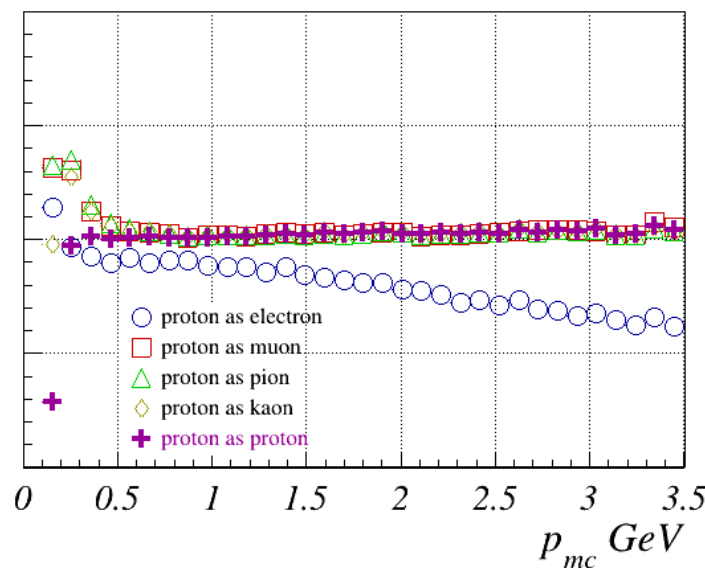
pion



kaon



proton



Cut:

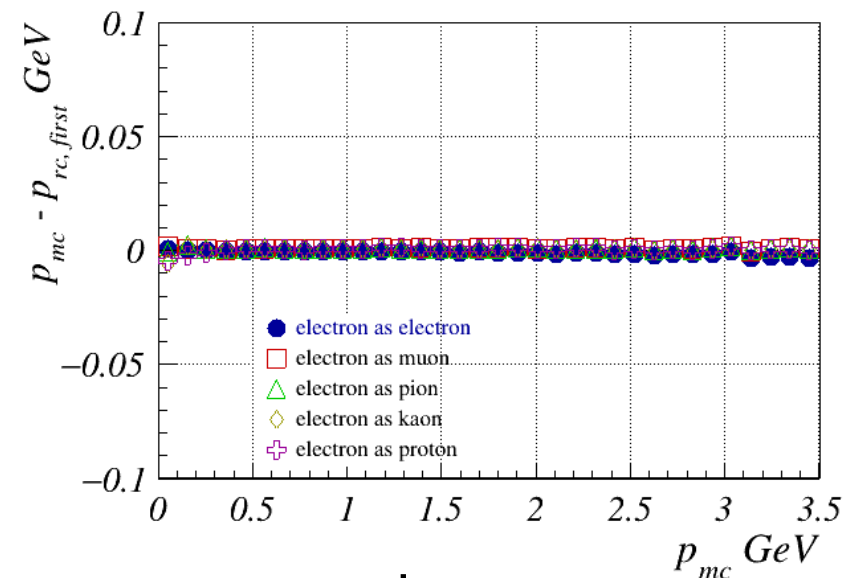
fitpars->GetIsGood()

```
//-----
inline Bool_t SpdTrackFitPar::GetIsGood() const
{
    if (fErrorFlag != 0) return false;
    if (HasErrorMsg()) return false;
    //if (fNFailedHits > 0) return false;
    if (fConvergencyGF != 1) return false;
    return true;
}
```

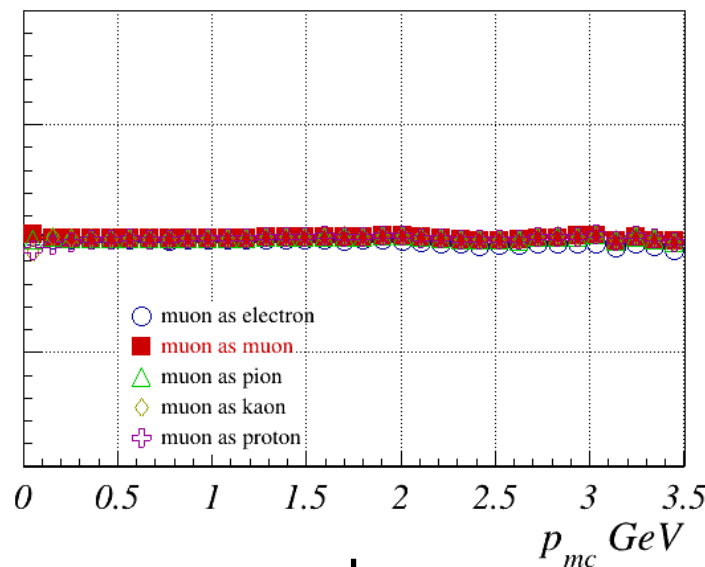
Profile: $p_{mc} - p_{rc, \text{first point}}$

Air everywhere for STRAW and SI

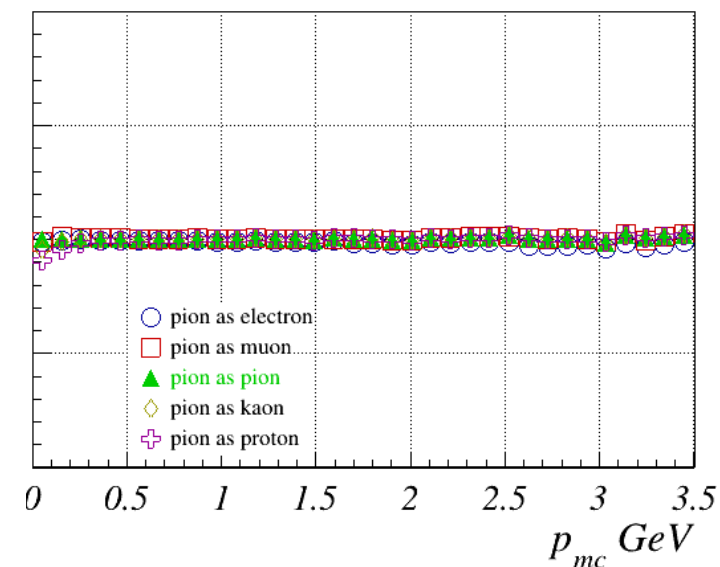
electron



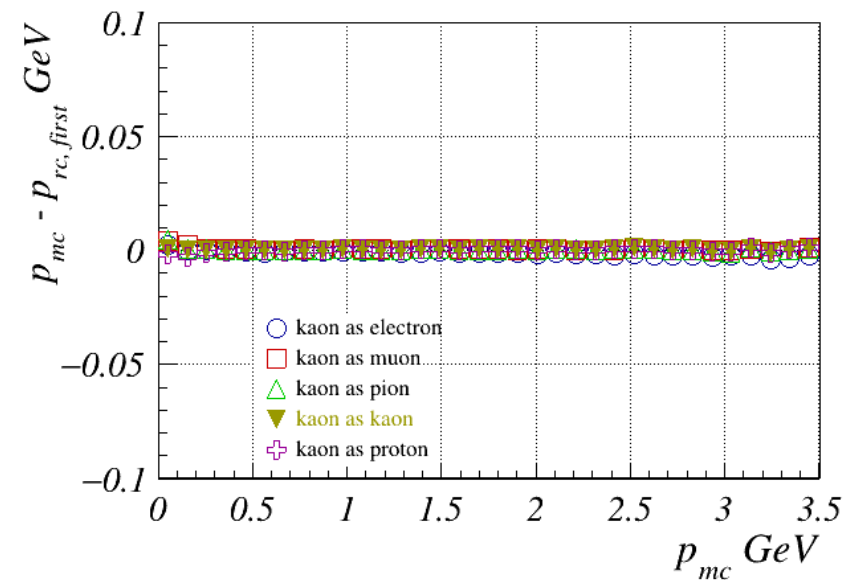
muon



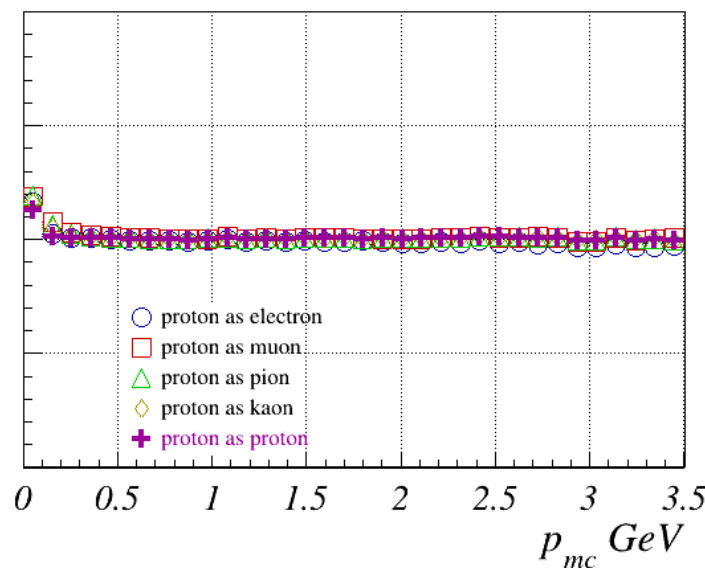
pion



kaon



proton



Cut:

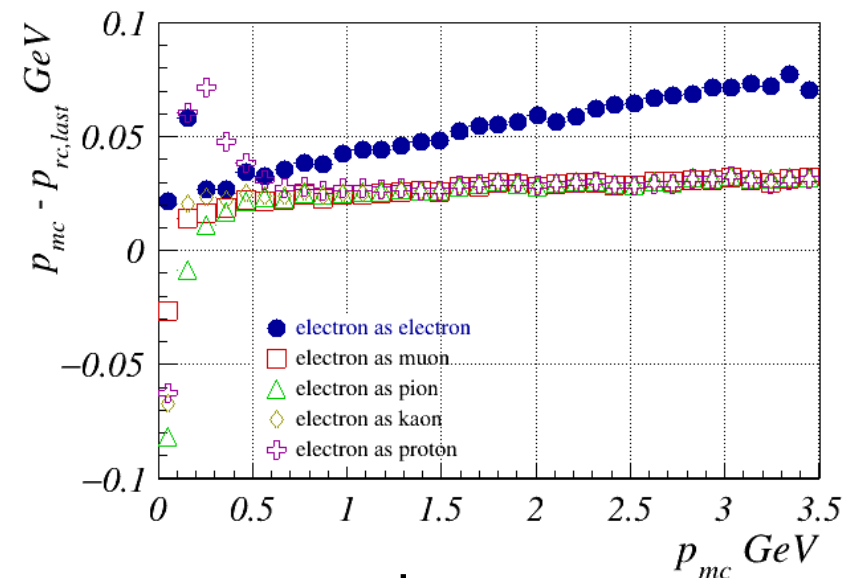
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    return true;
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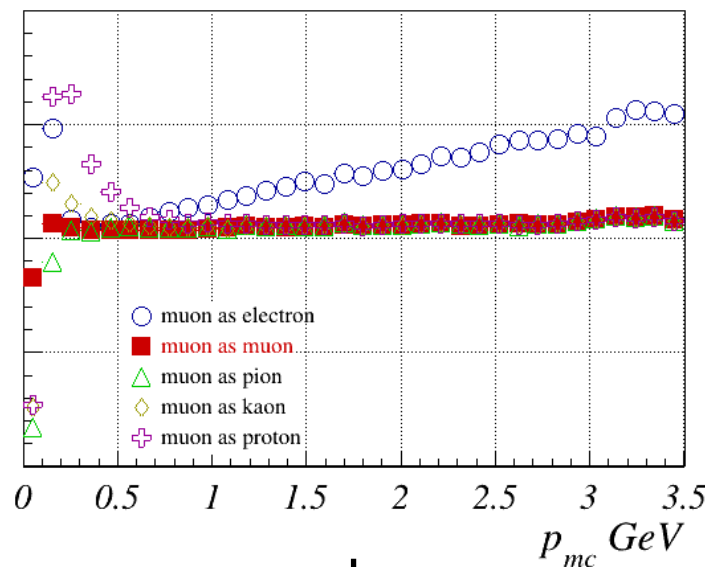
Profile: $p_{mc} - p_{rc, last point}$

Original material for STRAW and SI

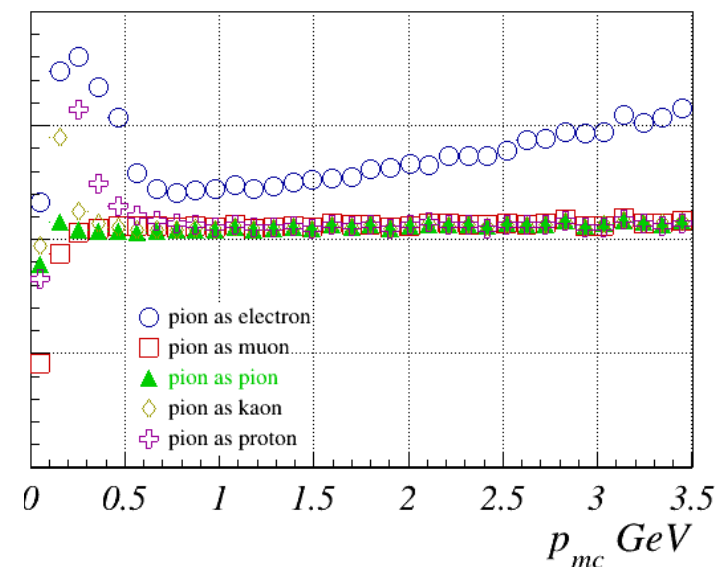
electron



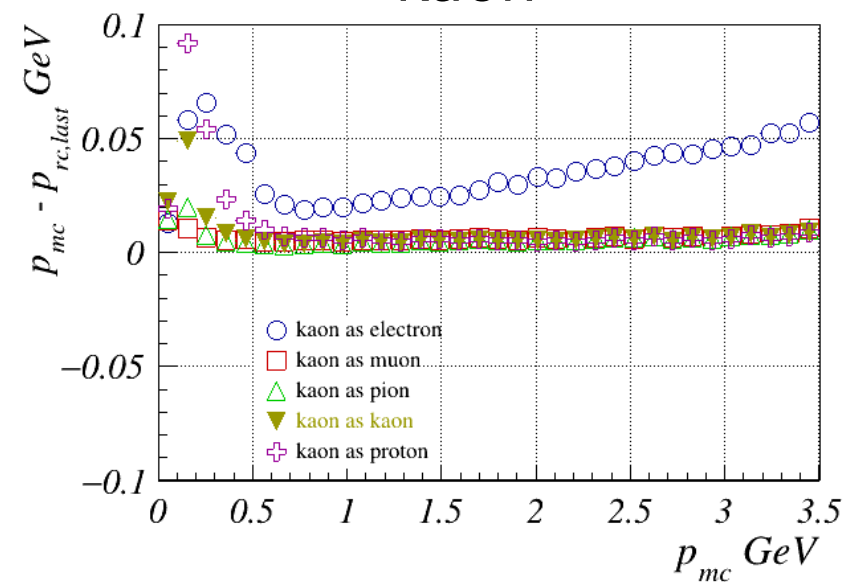
muon



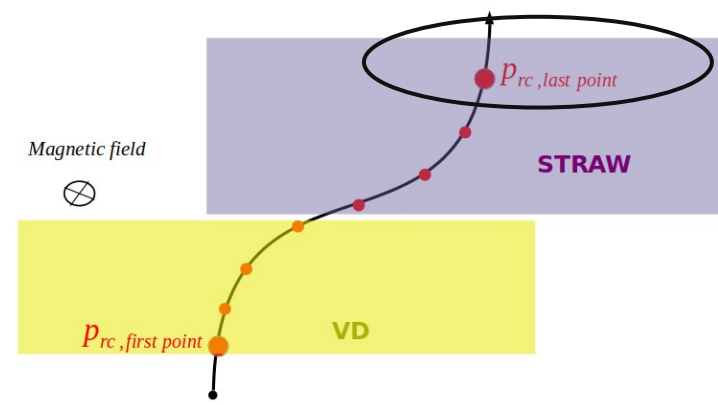
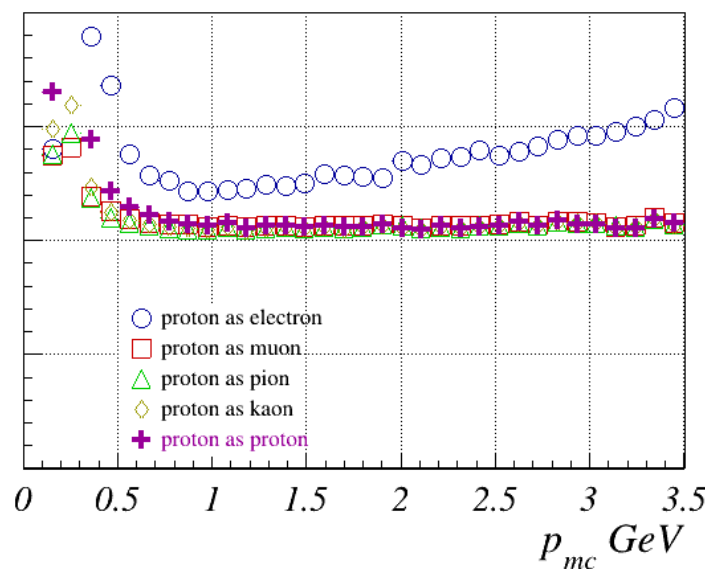
pion



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proton



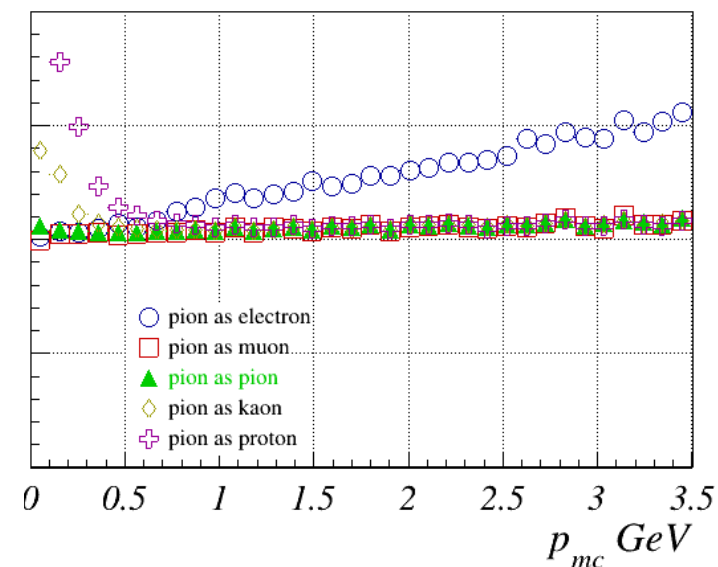
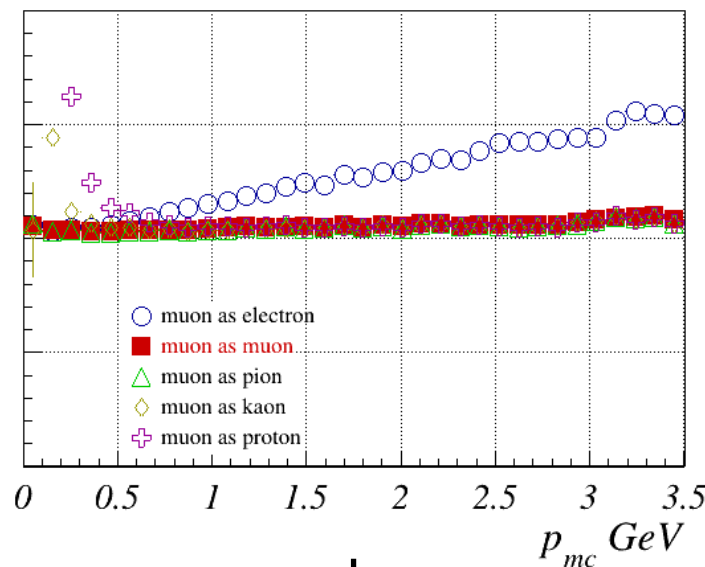
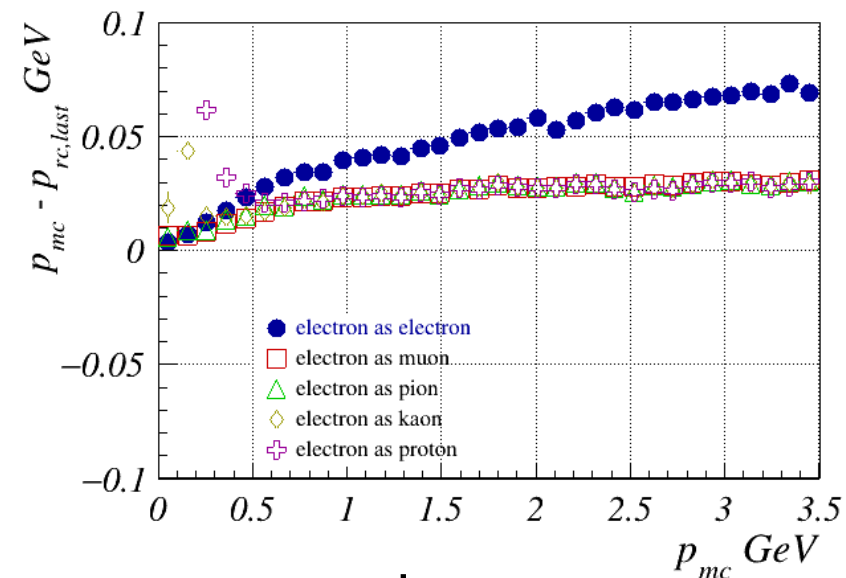
Profile: $p_{mc} - p_{rc, last point}$

Original material for STRAW and SI

electron

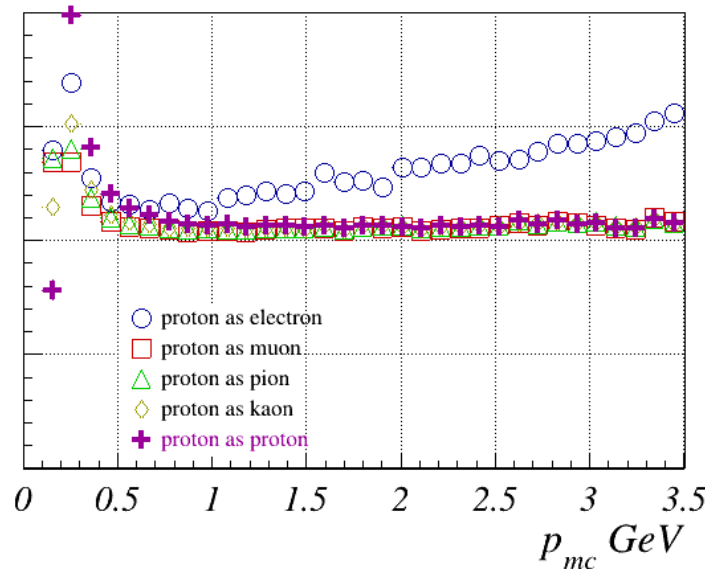
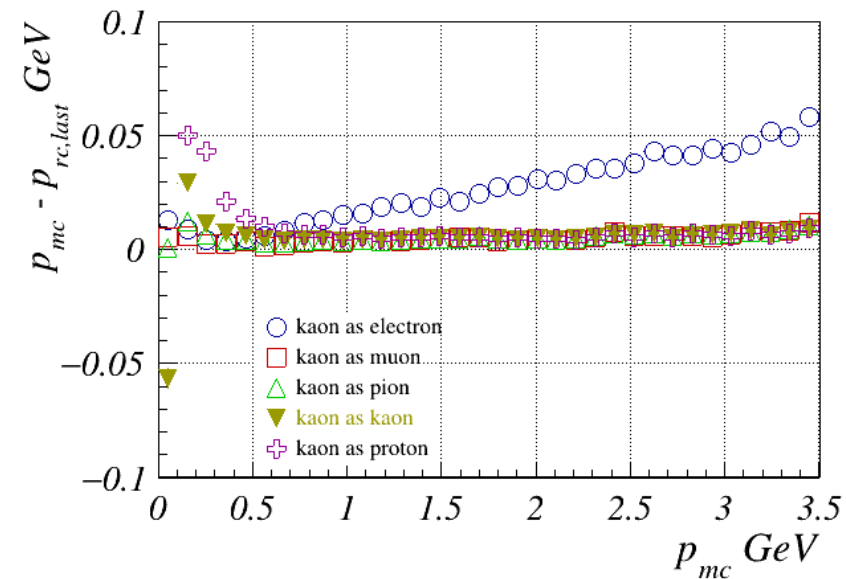
muon

pion



kaon

proton



Cut:

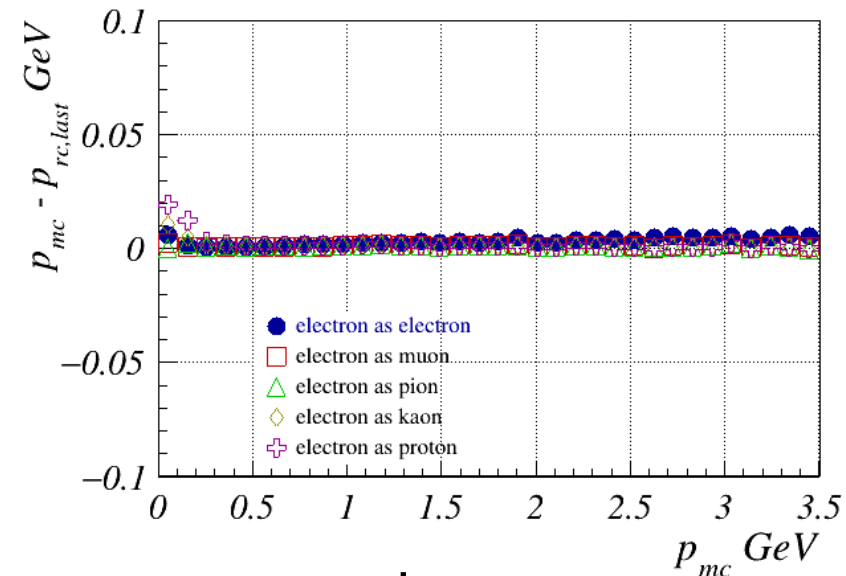
fitpars->GetIsGood()

```
//-----
inline Bool_t SpdTrackFitPar::GetIsGood() const
{
    if (fErrorFlag != 0) return false;
    if (HasErrorMsg()) return false;
    //if (fNFailedHits > 0) return false;
    if (fConvergencyGF != 1) return false;
    return true;
}
```

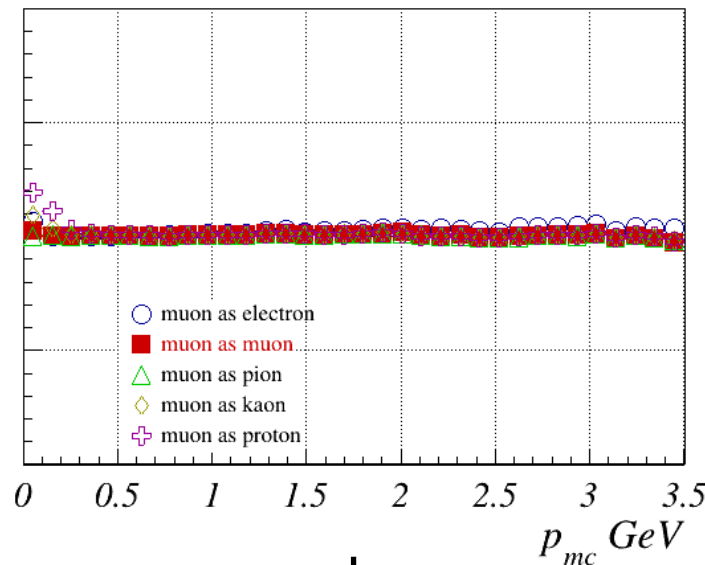
Profile: $p_{mc} - p_{rc, last point}$

Air everywhere for STRAW and SI

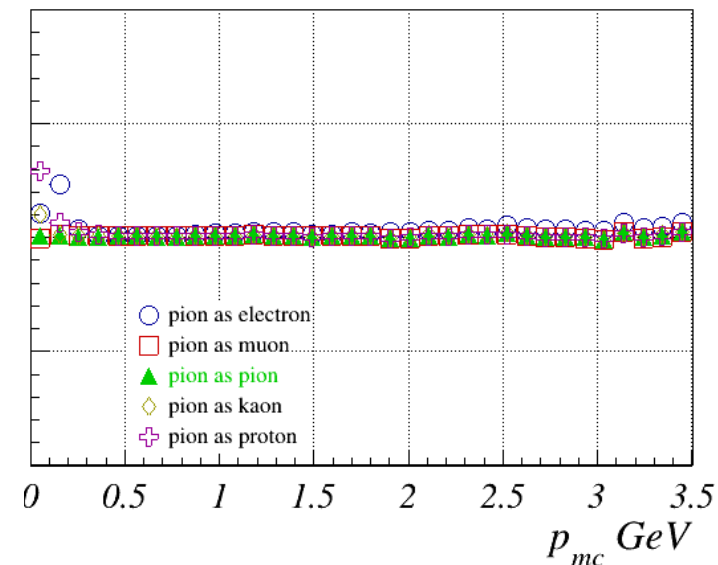
electron



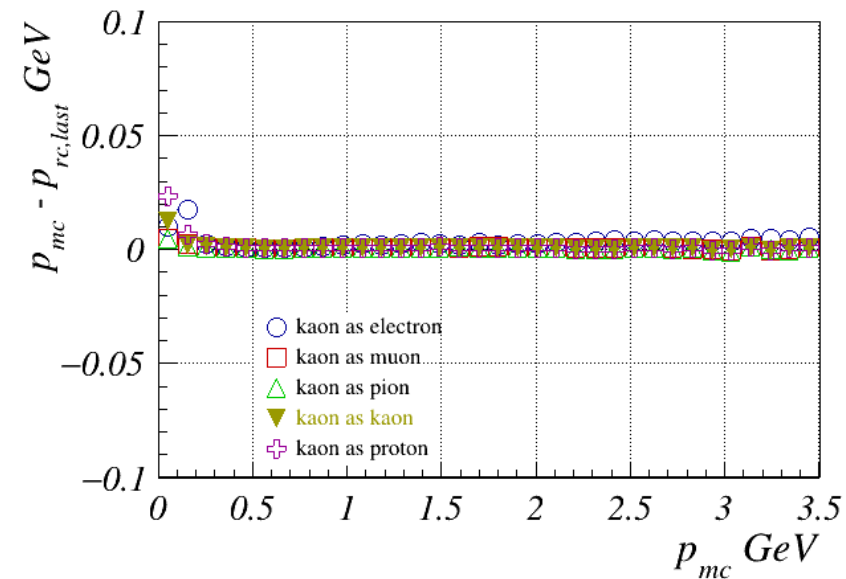
muon



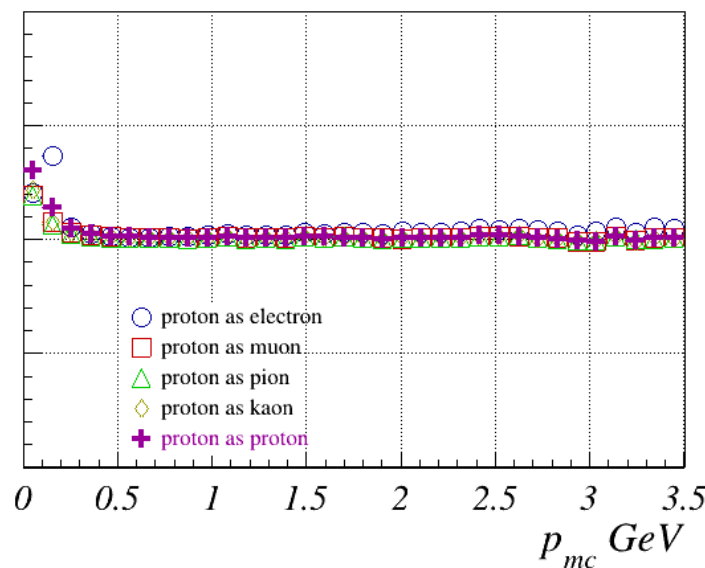
pion



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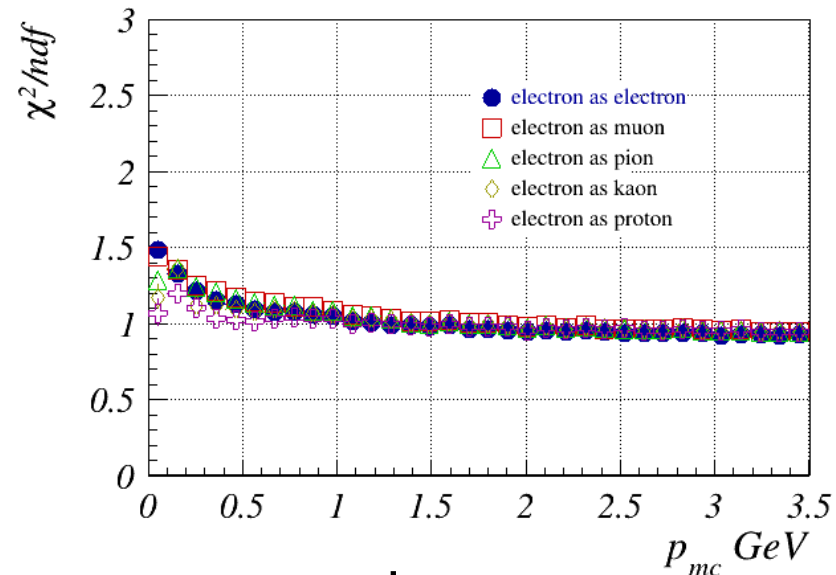
Cut:

fitpars->GetIsGood()

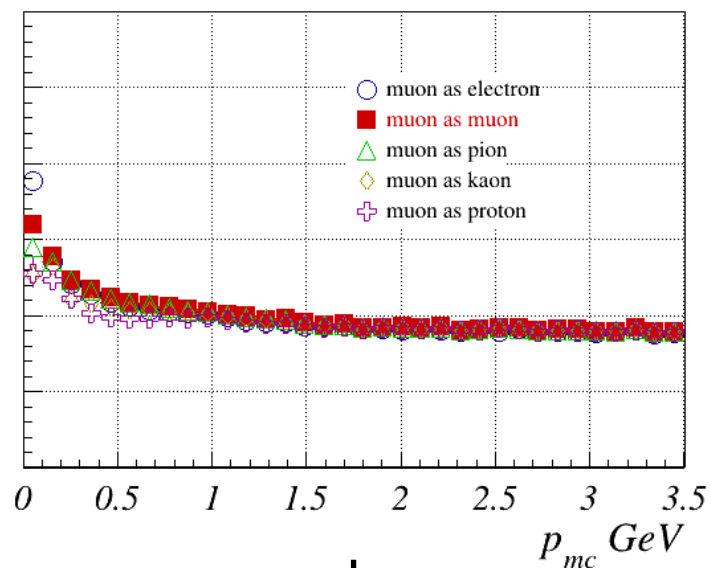
```
//-----
inline Bool_t SpdTrackFitPar::GetIsGood() const
{
    if (fErrorFlag != 0) return false;
    if (HasErrorMsg()) return false;
    //if (fNFailedHits > 0) return false;
    if (fConvergencyGF != 1) return false;
    return true;
}
```

Backup

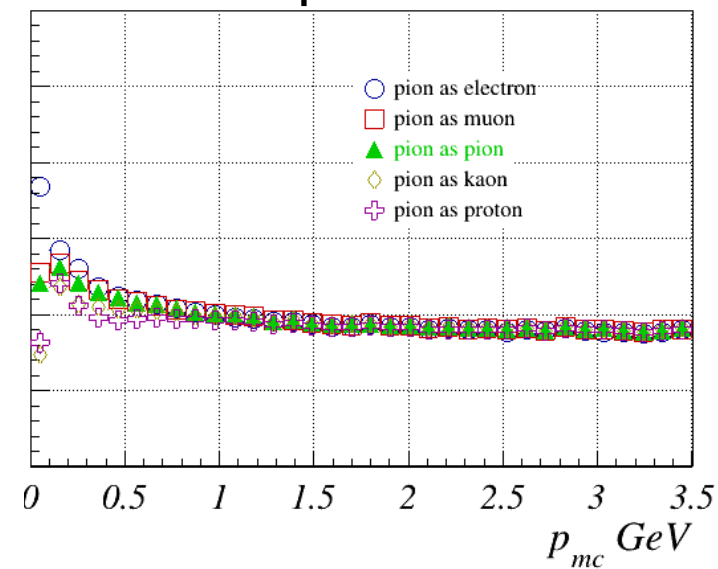
electron



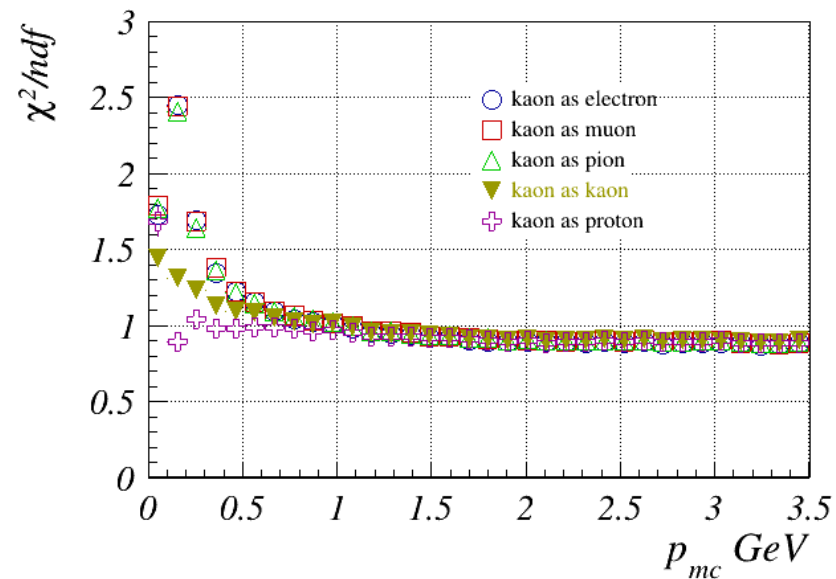
muon



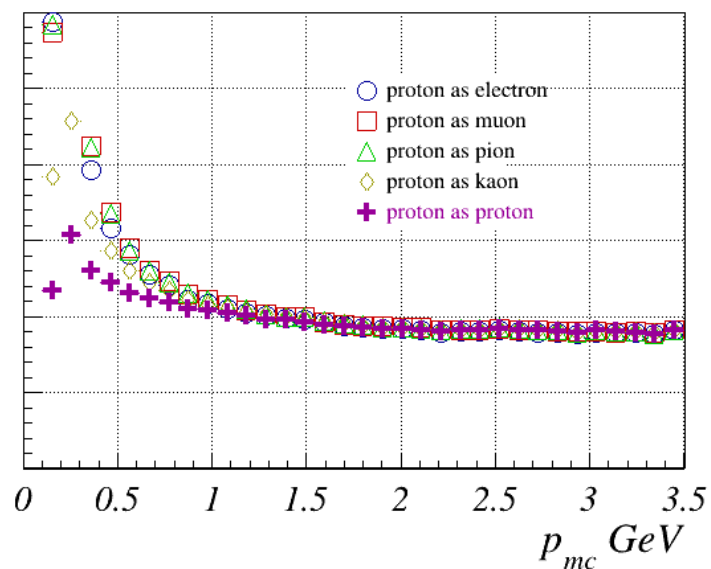
pion



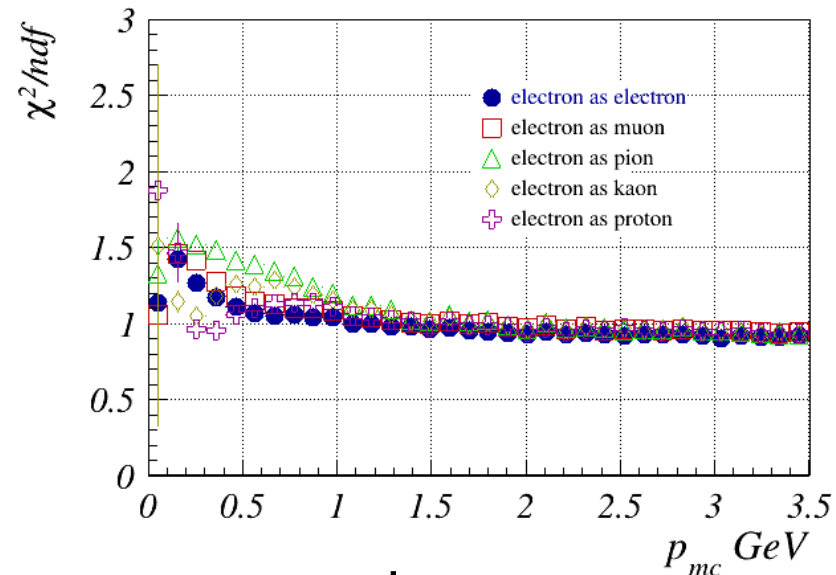
kaon



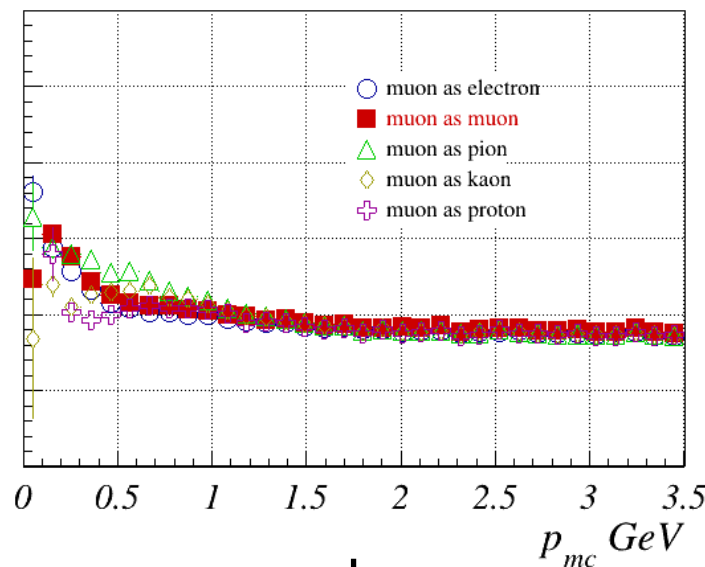
proton



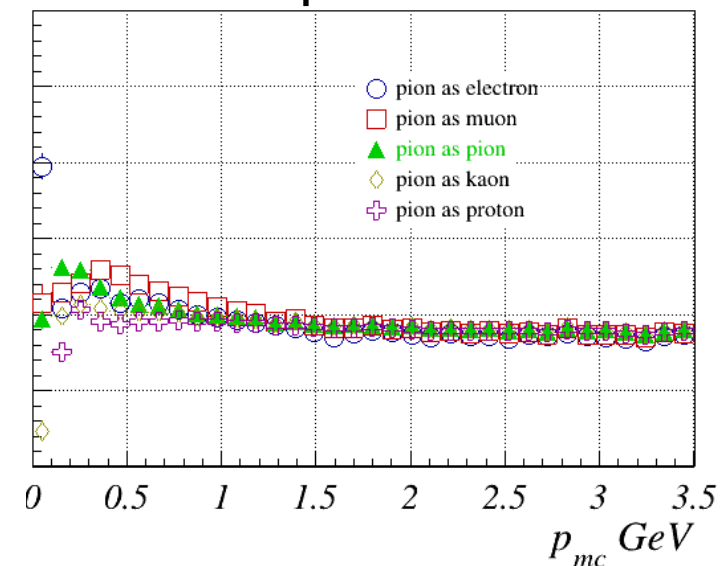
electron



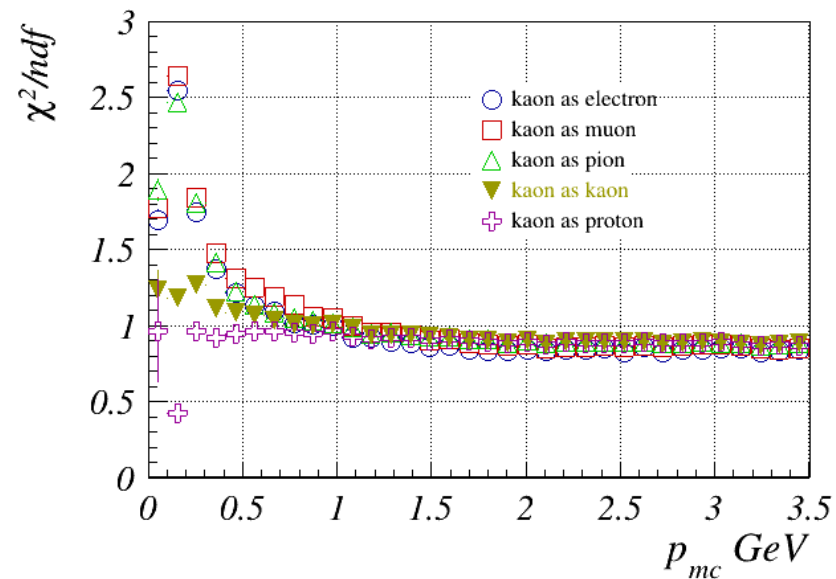
muon



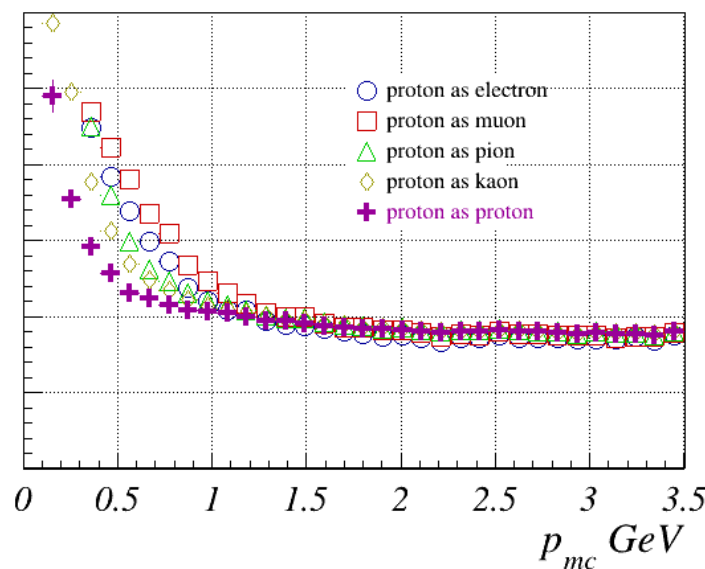
pion



kaon



proton



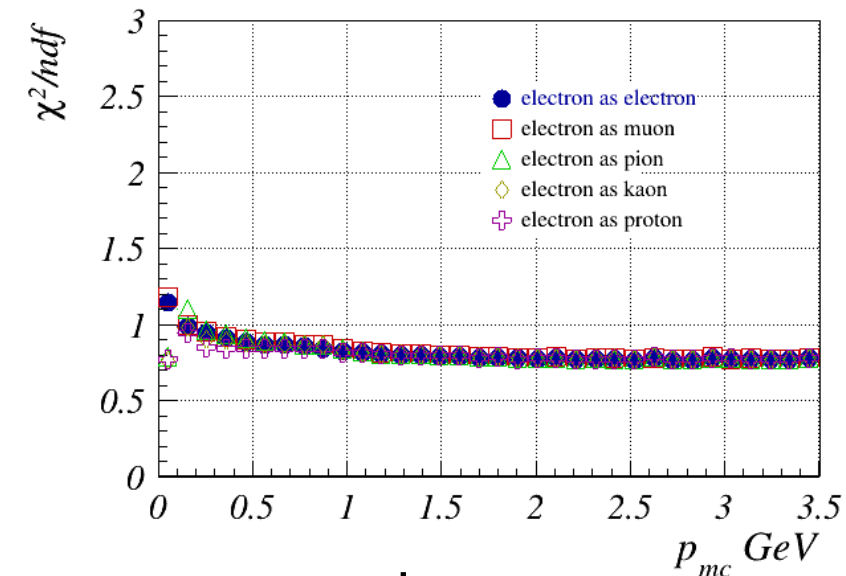
Cut:
fitpars->GetIsGood()

```
//-----
inline Bool_t SpdTrackFitPar::GetIsGood() const
{
    if (fErrorFlag != 0) return false;
    if (HasErrorMsg()) return false;
    //if (fNFailedHits > 0) return false;
    if (fConvergencyGF != 1) return false;
    return true;
}
```

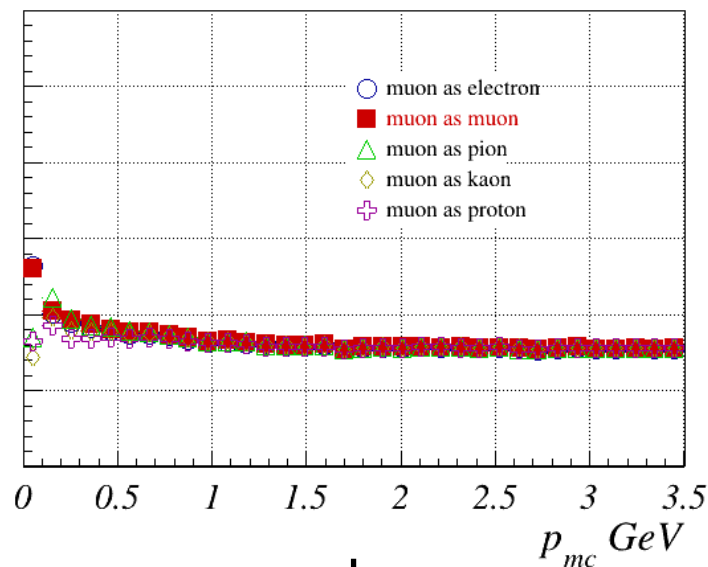
Profile: χ^2/Ndf

Air everywhere for STRAW and SI

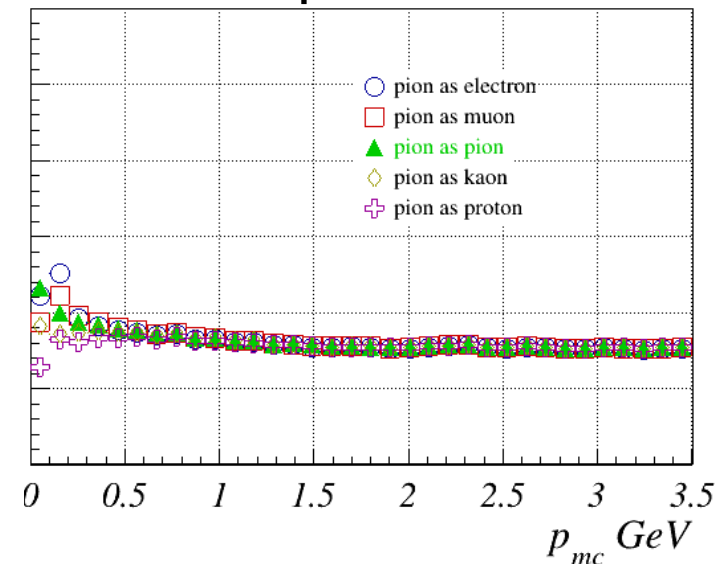
electron



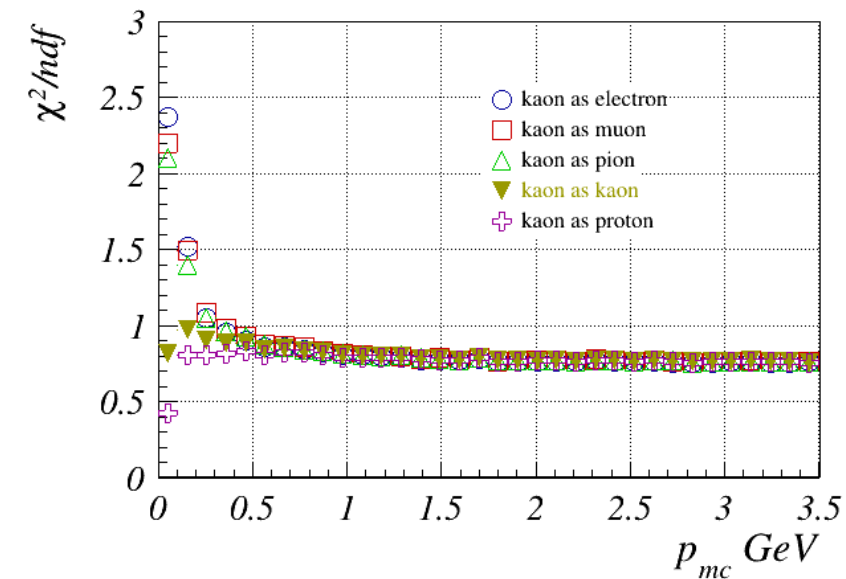
muon



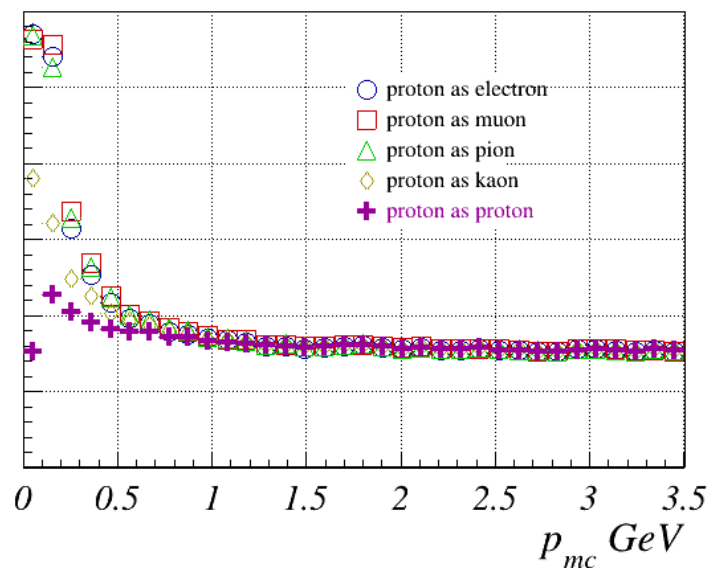
pion



kaon



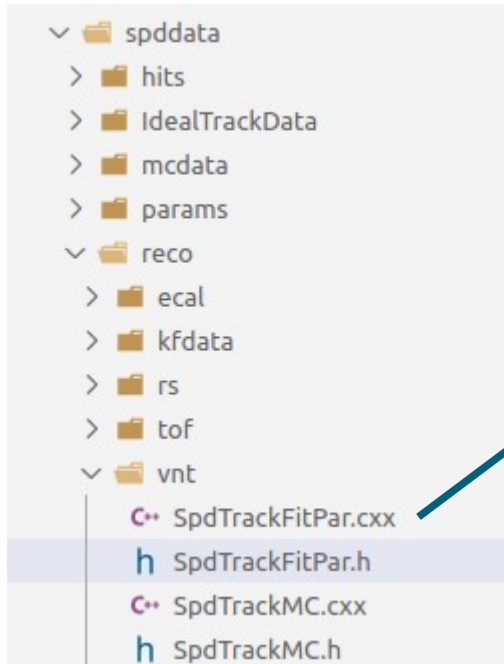
proton



Cut:
fitpars->GetIsGood()

```
//-----  
inline Bool_t SpdTrackFitPar::GetIsGood() const  
{  
    if (fErrorFlag != 0) return false;  
    if (HasErrorMsg()) return false;  
    //if (fNFailedHits > 0) return false;  
    if (fConvergencyGF != 1) return false;  
    return true;  
}
```

SpdTrackFitPar



```
//-----  
inline Bool_t SpdTrackFitPar::GetIsFittedOk() const  
{  
    if (fErrorFlag != 0) return false;  
    if (!fFirstState) return false;  
    if (!fLastState) return false;  
    return true;  
}
```

```
//-----  
inline Bool_t SpdTrackFitPar::GetIsGood() const  
{  
    if (fErrorFlag != 0) return false;  
    if (HasErrorMesg()) return false;  
    //if (fNFailedHits > 0) return false;  
    if (fConvergencyGF != 1) return false;  
    return true;  
}
```

```
//-----  
inline Bool_t SpdTrackFitPar::GetIsAcceptable() const  
{  
    if (fErrorFlag != 0) return false;  
    if (HasErrorMesg()) return false;  
    //if (fNFailedHits > 0) return false;  
    if (fNDF < 3) return false;  
    if (GetChi2overNDF() < 2) return true;  
    return false;  
}
```