Update

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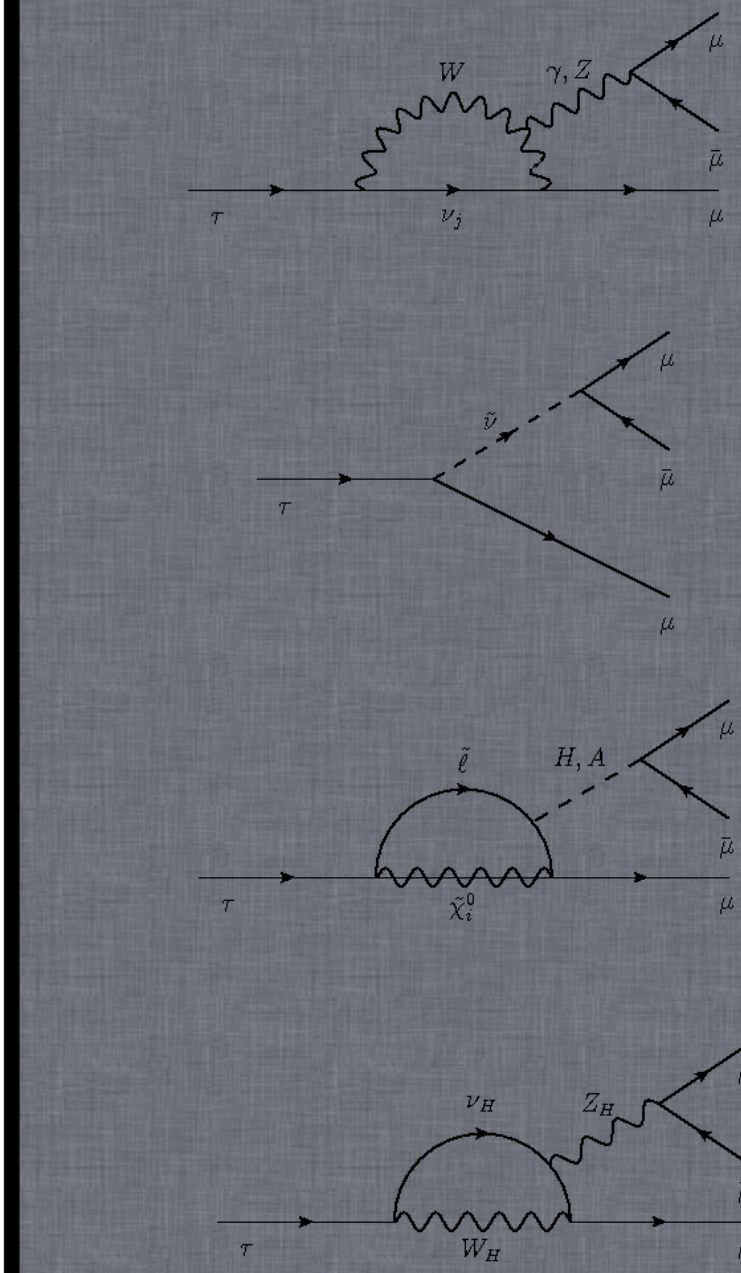
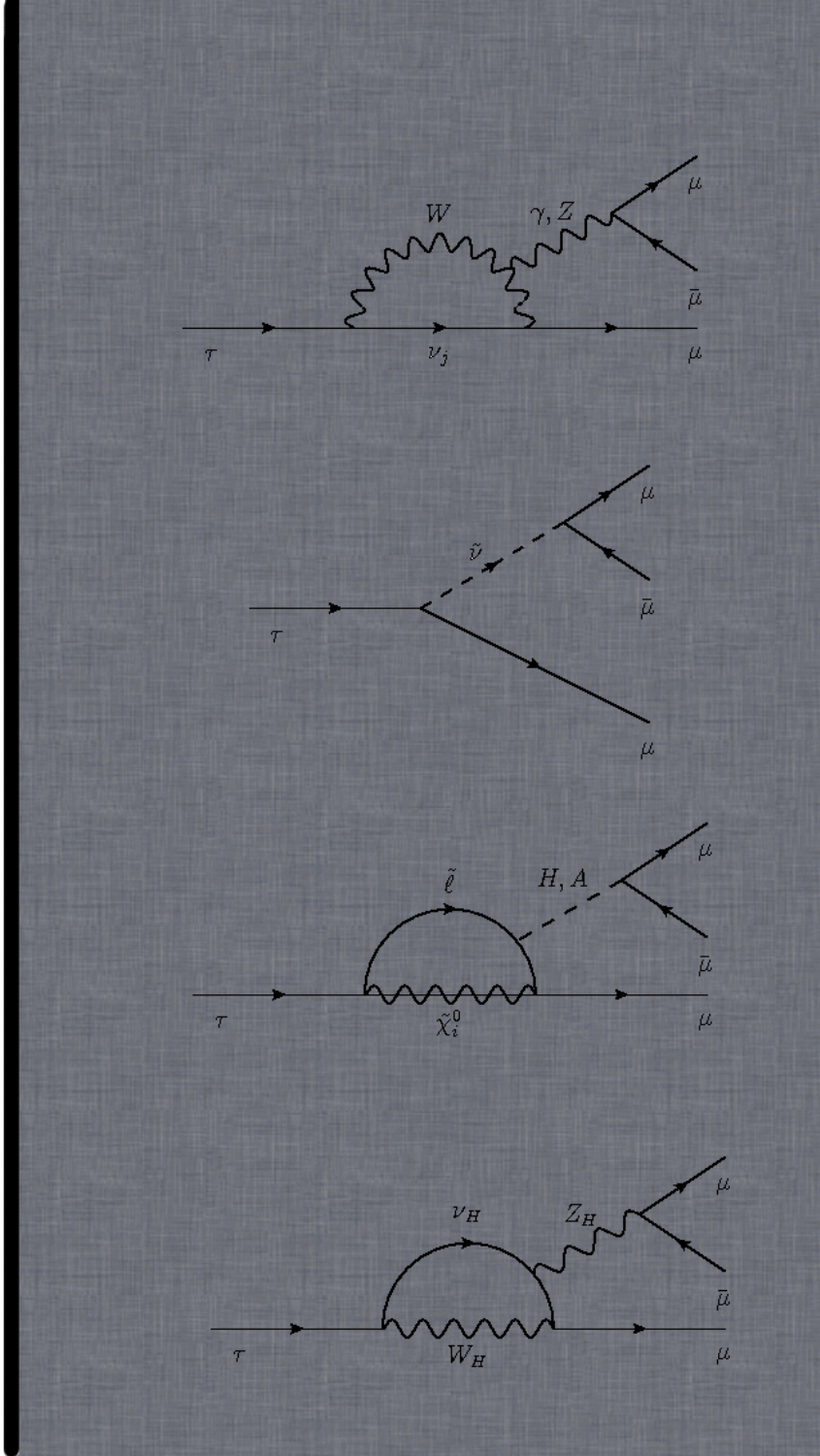


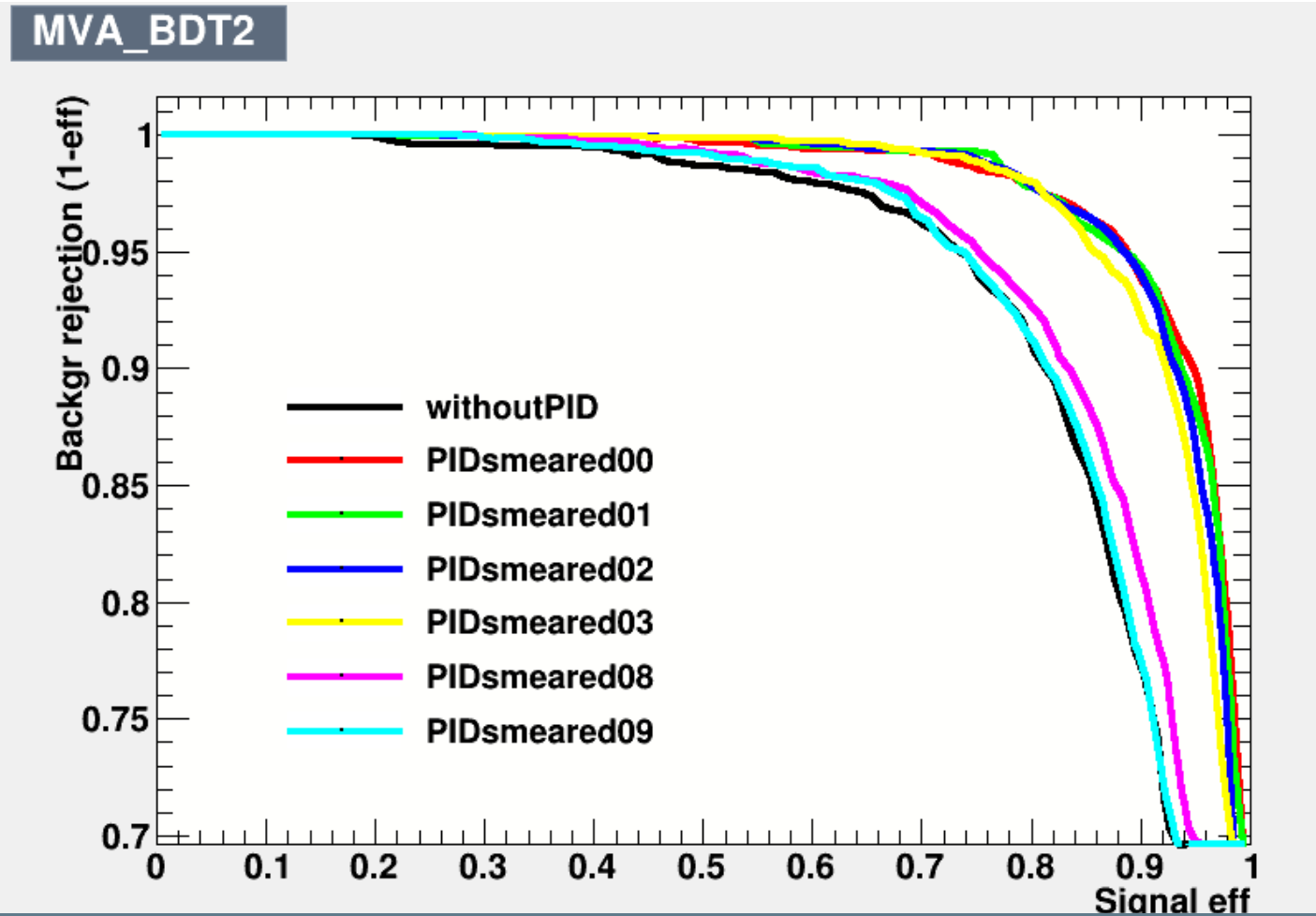
PID + GeoMVA

Calibration of PGMVA



Reminder

Last week I shown that we might gain quite a lot by putting PID inside our GEOMVA. Let's see if we are sensitive to poor description of PID in MC(credits to **Helge Voss**):



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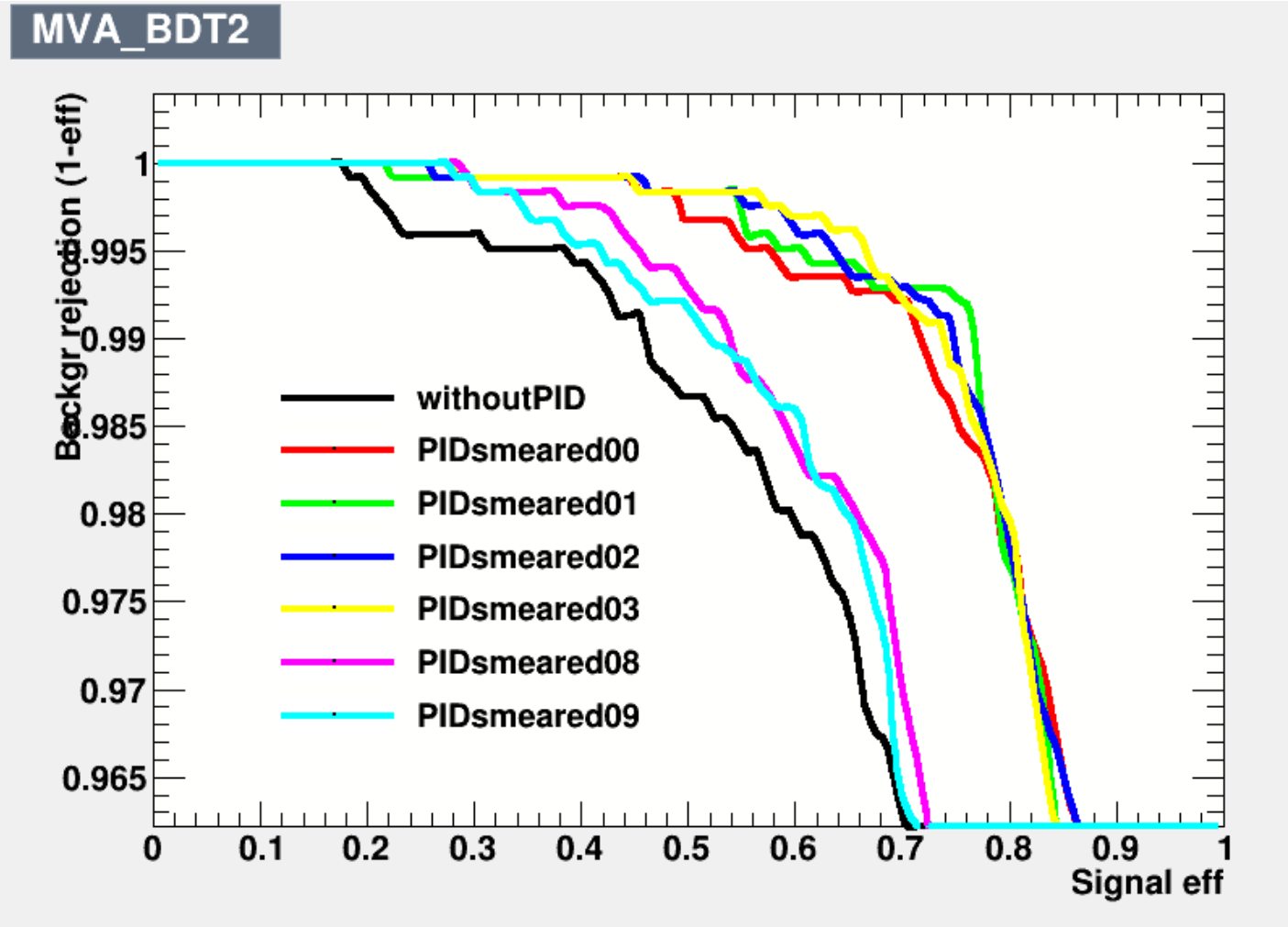
Closer look



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Conclusion

1. Clearly our optimistic MC has no impact on our MVA performance.
2. Tools ready to train it with different information loose="smearing"

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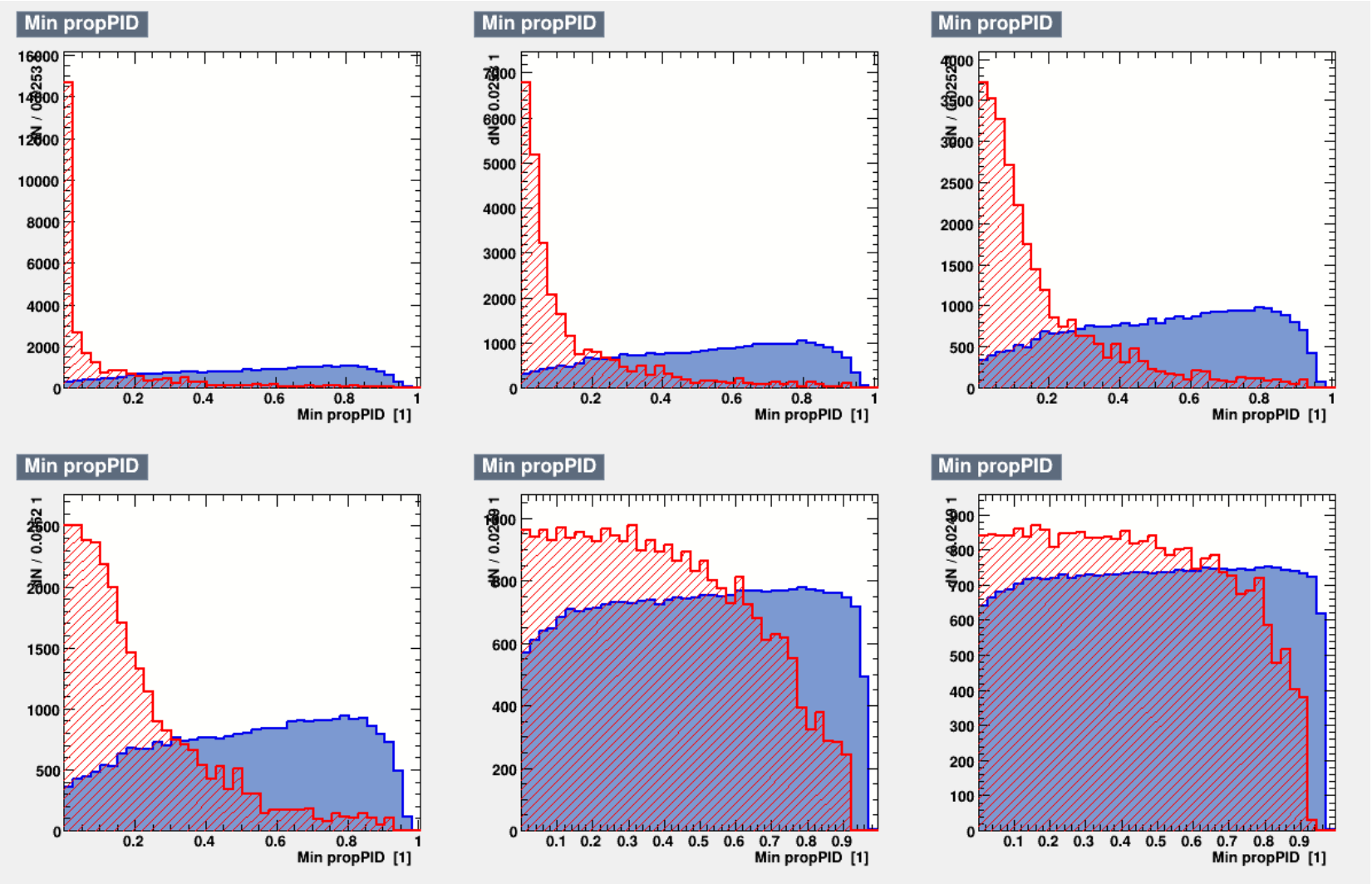
Conclusion



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Calibration of PGMVA=PID + GeoMVA

- The biggest worry is if we can calibrate this channel.
- The following idea allowes to calibrate our channel on $\mathrm{D_s} \to \phi\pi$.
- It looks that calibration can be even simpler than the one we make.
- Ok enough of building attention, let's caught to the chase

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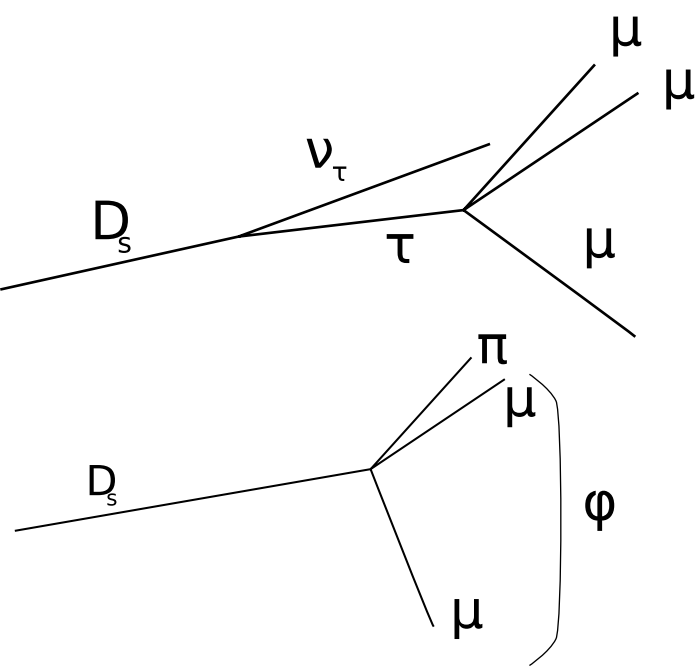
Calibration of PGMVA=PID + GeoMVA

What we have:



- For free we have 2 mu PID.
- For signal we need 3.
- Let's take our $\mathrm{D_s} \to \phi\pi$ and bin our muons in 3D bins of n_{trk}, $P_{t,\mu}$, and η_{mu}.
- For each of the bins we have a PID distribution for muon
- Then for the π in a given bin we choose a PID according to μ PID in this bin.
- $\mathrm{B} \to K^*\mu\mu$ uses a similar approach.

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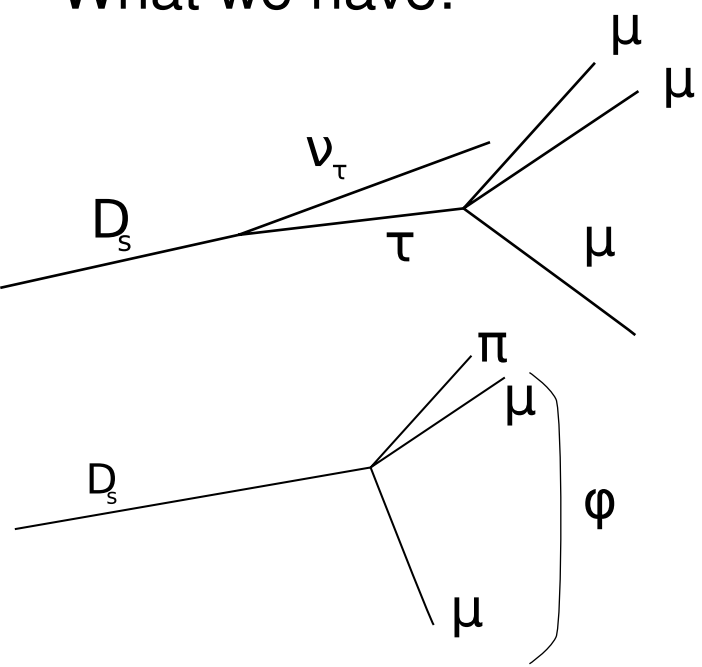
Calibration of PGMVA=PID + GeoMVA

What we have:



- Calibration is in principle easier.
- Use only one channel, instead of two.

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