B→D*τν Update

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Progress and issues

Issues discussed on the last meeting:

- Too small statistics for B->Dlnu component, it should constitute the main source of background

  Problem was trivial. The BB(mixed) sample I used was only for experiment 55 (~10% of data), other samples were from a whole stream.

- Mismatch in plots between B-sig (D/D* masses) and B-tag characteristics

  The selections used for B-sig/B-tag plots were the same, but there was a bug in the plotting script.

I fixed and refactored the background analysis code and added:

- Stacked/unstacked histograms
- Splitting background components between lepton flavor (in total ~20 components,
→ Also added a possibility to merge some of the components in the analysis. Will decide based on unstacked distributions which components can be merged.
- Added Plots for different B-sig/B-tag selections
  → Cut flows, calculating the number of events and relative/total efficiency at different selections.

Code: https://gitlab.desy.de/mkaleta/analysis-semitauonic

I needed to reprocess the samples. Unfortunately I found a bug in new processed samples. I run the reconstruction again, but it hasn't processed yet.

- I will wait for reprocessing and attach new results on indico hopefully by the end of the week.
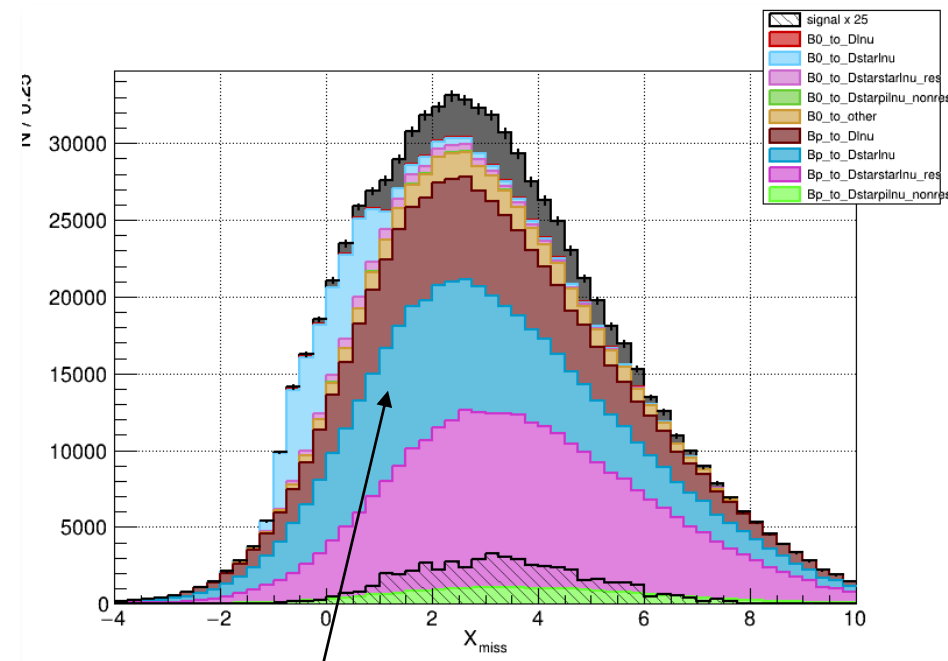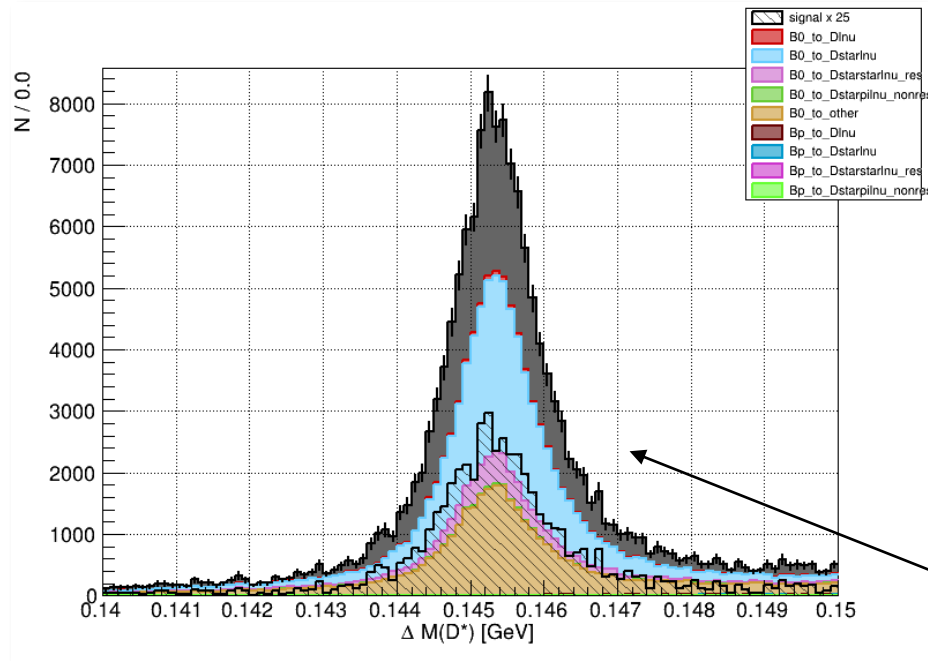
No progres on fitting so far → next week.

Problems with statistics for Dlnu
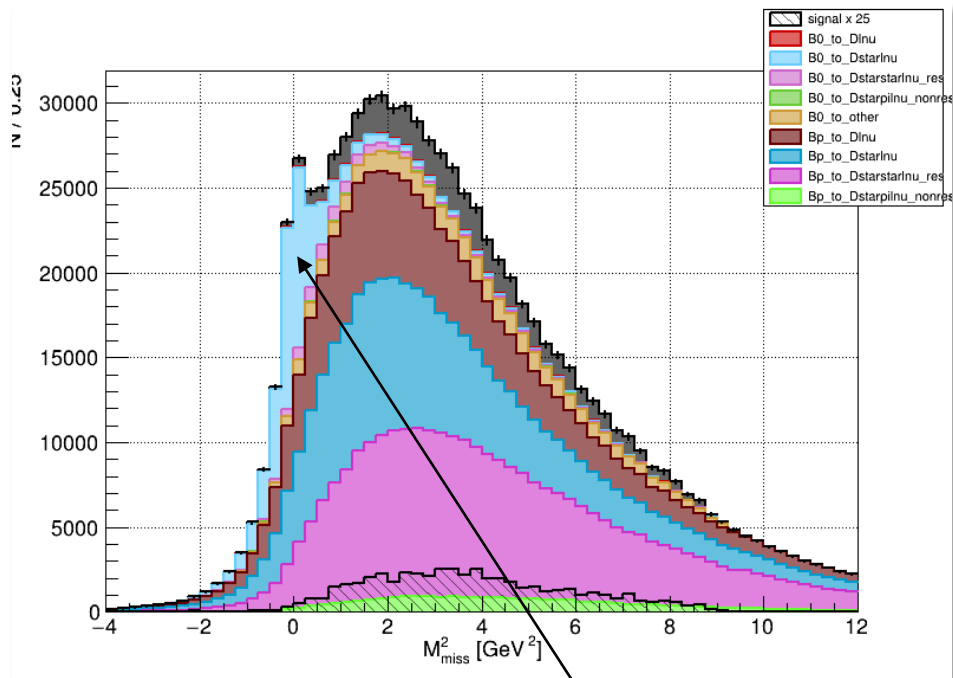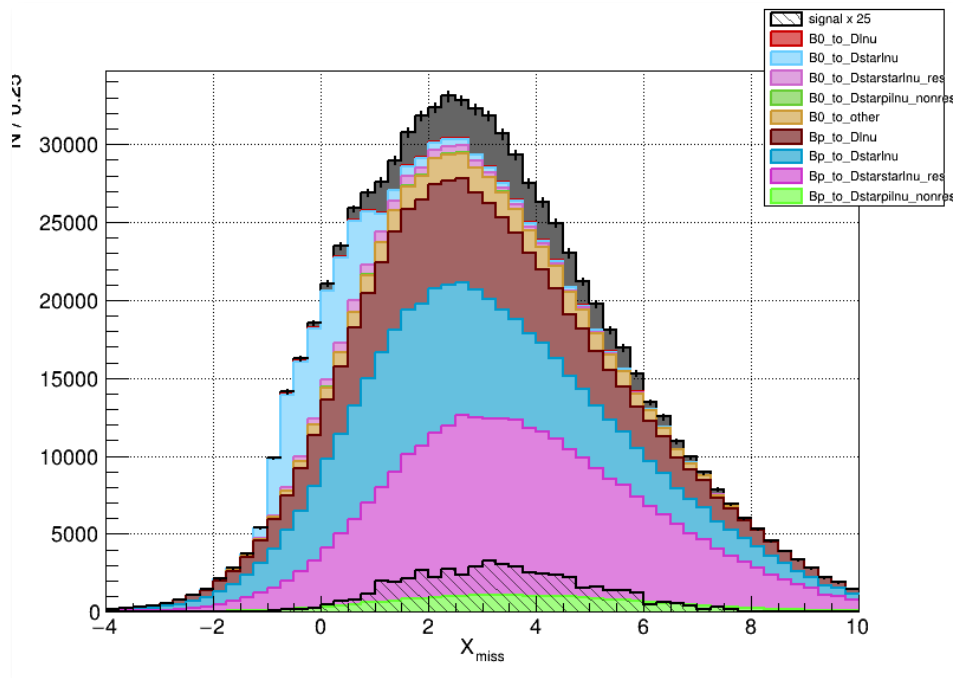
- One stream MC Generic
- Inside D^0 mass region: 1.80 GeV < M(D^0) < 1.95 GeV (loose online selection)
- Inside D^* mass region: 0.14 GeV < ΔM(D^*) < 0.15 GeV (loose online selection)
- Outside M_{tag} mass region: M_{tag} > 5.20 GeV (loose offline selection)

Dlu statistics too small

Mismatch withB-sig/B-tag plots

- One stream MC Generic
- Inside D^0 mass region: 1.80 GeV < $M(D^0)$ < 1.95 GeV (loose online selection)
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Differences in background composition for the same selections