

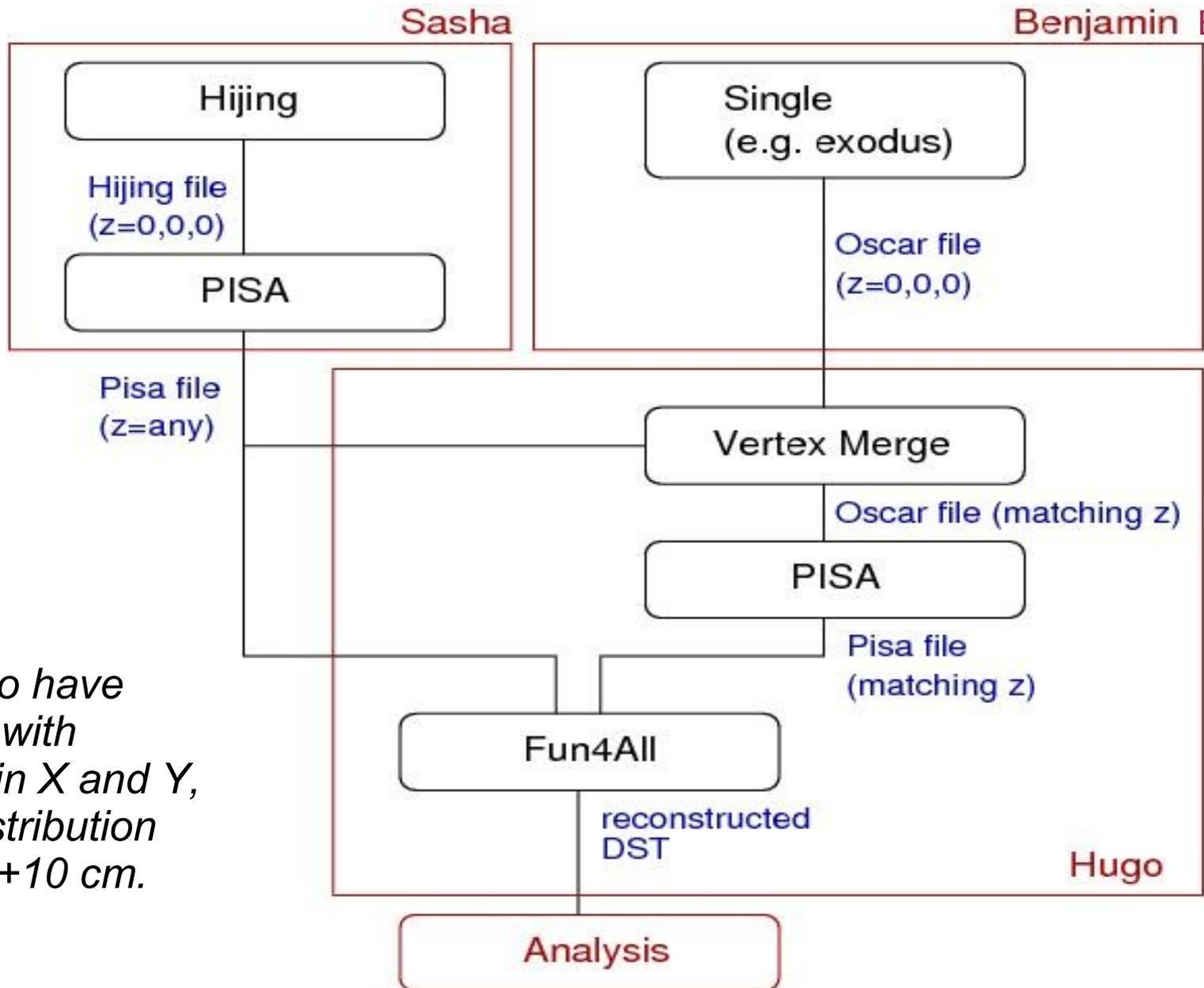
# Blind analysis challenge for FVTX/VTX J/ $\psi$ mass resolution with VTX installed

*Sasha Lebedev, ISU*

VTX quarterly meeting, September 8, 2008

# Introduction to blind analysis challenge

Matthew Lockner  
Benjamin Banner



*Current plan is to have vertex smeared with 1mm Gaussian in X and Y, and have flat distribution in Z from -10 to +10 cm.*

# Signal

FVTX group plans to have single muon files, with muons coming from 3 different sources:

- charm/bottom decays (HERWIG)
- Direct thermal muons (EXODUS)
- Muons from Kaon decays

Amount of muons from each group will be unknown to the analyzers. Test signal files already exist (oscar text format).

For VTX I would suggest:

- electrons from D mesons (PYTHIA?)
- electrons from B mesons
- random single electrons and/or conversions

Matthew Lockner (ISU) will produce VTX signal files.

OSCAR files with at least one electron in Central Arm acceptance with (0,0,0) vertex.

# Current status

- Testing the procedure. Simulation (PISA) code ready.
- Generated 10k minimum bias Hijing events.
- Processed ~2k events through PISA  
(this is the most CPU consuming part – few minutes per event)
- Hugo will test merging procedure with muon signal files.
- The goal is to make sure that everything works properly  
some time this week or early next week.
- Suggestions for improving the procedure are welcome!
- BAC meetings every week on Wednesday at 10:15am BNL time.
  - Axel, Melynda, myself, Hugo, Tony

# Some other thoughts

- With current approach the challenge will be done by perfectly calibrated detector.
  - introduce misalignments? (easy for VTX)
  - introduce dead areas? ( easy for VTX)
  - noise is there by default at 10% of MIP level
  - something else? (suggestions are welcome)

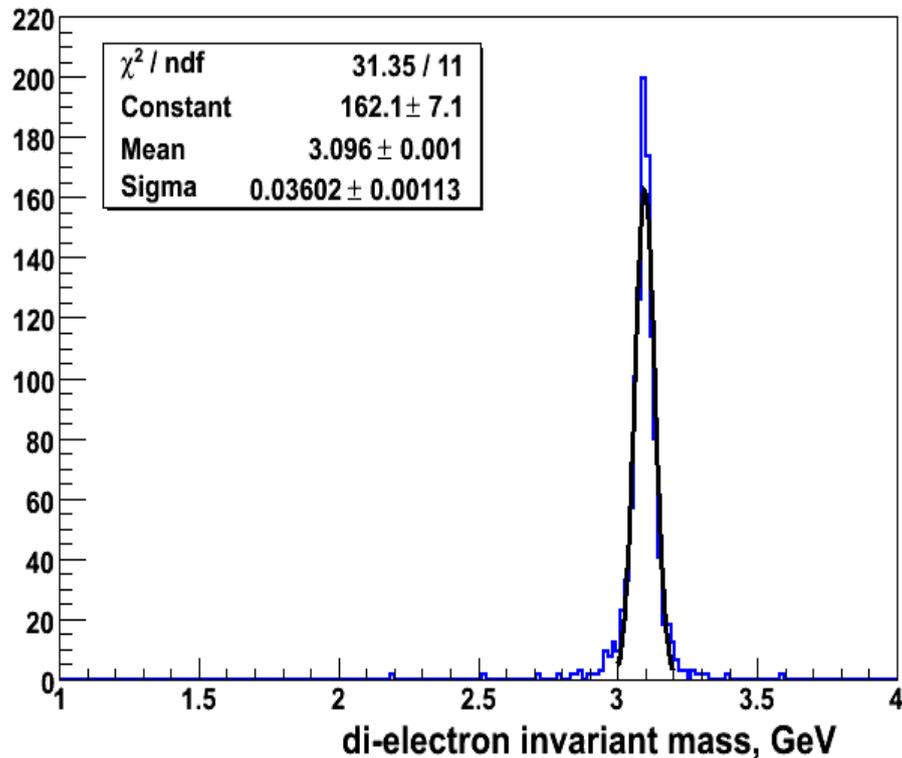
Is this too much for the first attempt?

- 'Calibrate' software first by analyzing data with a known amount of signal, and then do a blind analysis.

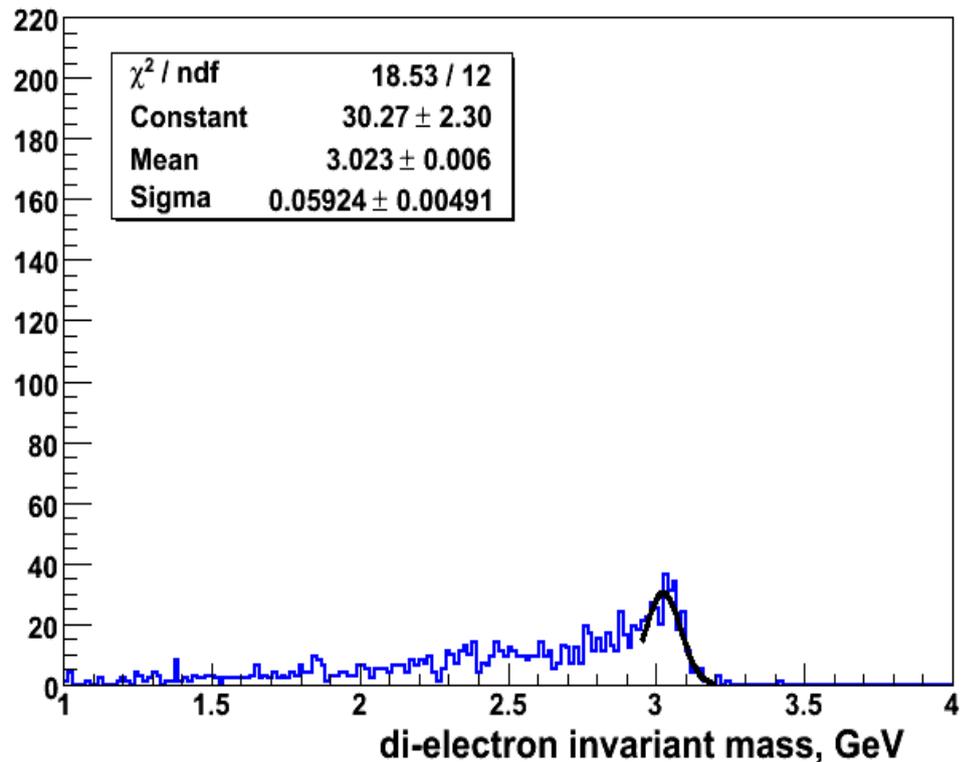
**J/ $\psi$  mass resolution  
with VTX installed**

Single J/Psi simulated and reconstructed with and without VTX.  
Recent simulation done with ~13% VTX thickness.  
Current understanding is ~10%.

*VTX OFF*



*VTX ON*



Two year old simulation with 5.6% VTX thickness.

VTX OFF

VTX ON

