Higgs Branching ratio study

ILC physics and software meeting

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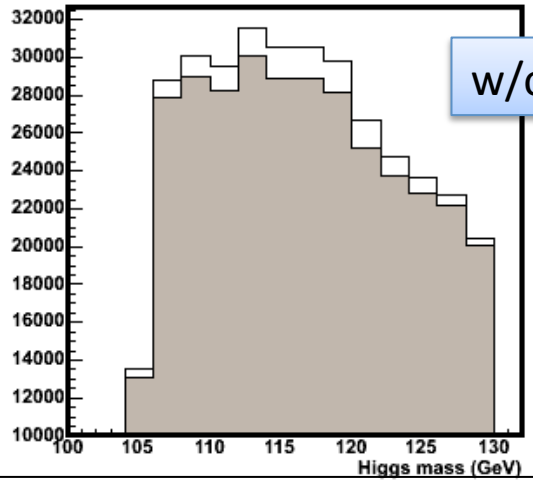
Current status

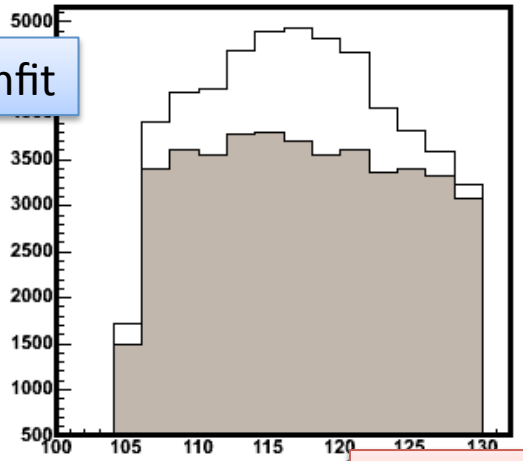
- Coping additional 350 GeV samples from Grid site
  - gLite version trouble? has been solved by Iwai-san at ilcui01
  - Disk usage on /data17 will reach to the full, need to move.
    - How about the common rule on jlclogin2 disk usage?
- Checking kinematic constraint fit for qqH mode
  - $|M_H-M_Z|$=120-91.2 GeV mass constraint in 5C fit
    →Try previous Mz=91.2 GeV constraint for comparison
  - Consider to use 4C fit for vvH mode (MM constraint)
    →MarlinKinfit usage is checking
    - Need to re-run with ilcsoft? or can independently work with Mars?

Reconstructed Higgs mass distribution

250 GeV



350 GeV



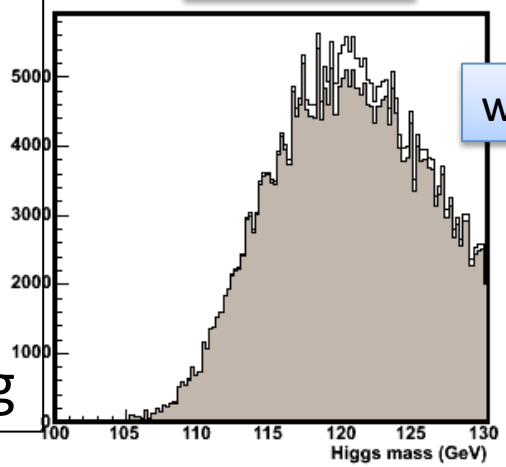
w/o kinfit

5 Constraints fit

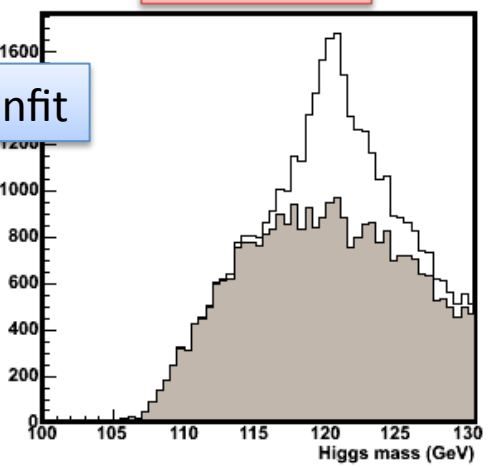
- $\Sigma P_i=0$
- $\Sigma E_i-Ecm=0$
- $|M_{12}-M_{34}|=|M_H-M_Z|$

Apply all the cuts
except for the Higgs mass cut
Beam spread, Brems. photon
are not considered.
Still poor at Ecm=250 GeV
w/o b-tagging→Now checking

250 GeV



350 GeV



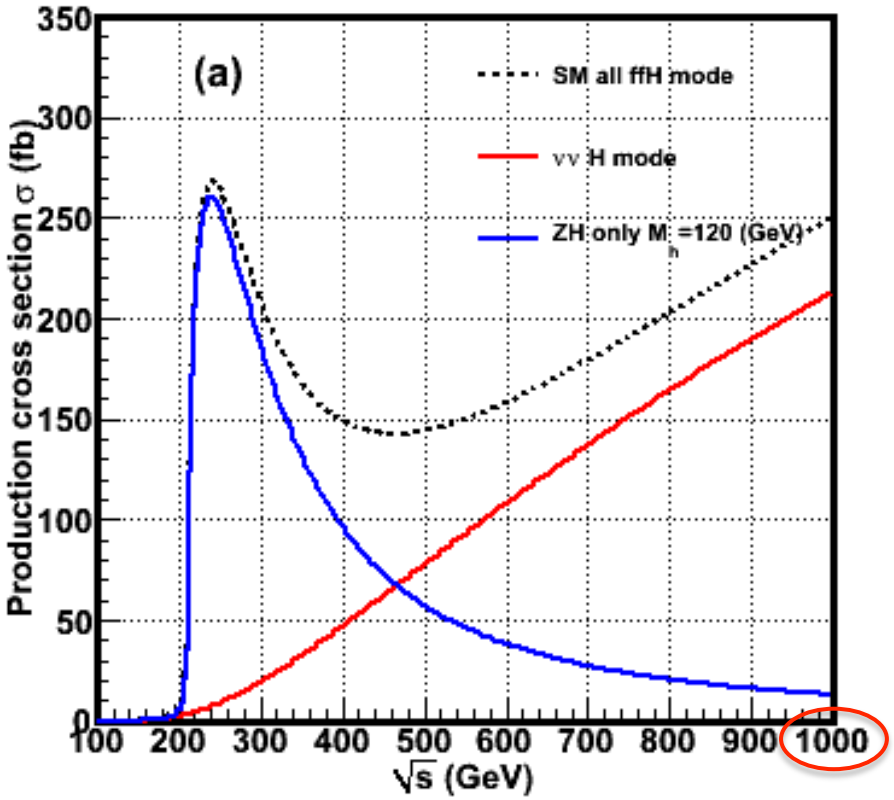
w/ kinfit

BR studies communication

- Start to communicate with other BR study person
  - Nina Herder (Bonn University)
    llH BR study at Ecm=350 GeV
    (Use same DST sample generated by Miyamoto-san)
- Considering how to share and separate with my study
  - Separate with channel (nnH, qqH) or Ecm (250, 350 GeV)?
- Ask Nina to send the current status and future plans
  - No information about her study strategy and status
- vvH @1 TeV is also considered as DBD benchmark process
  - Data sample generation plan should be checked

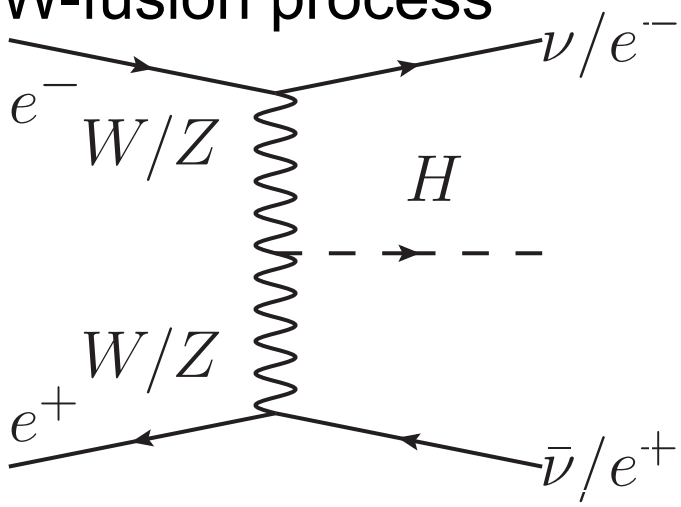
vvH @ 1 TeV for DBD

DBD benchmark process
σ*BR for H→μμ, bb, cc, WW, gg



HDECAY w/o beam pol.

Mainly produced through W-fusion process



- Generator samples are not prepared
- Use template fitting strategy?
- Other analysis scheme?
  - No information about Nina's way
- Need to compare with SiD strategy and results