

H → invisible

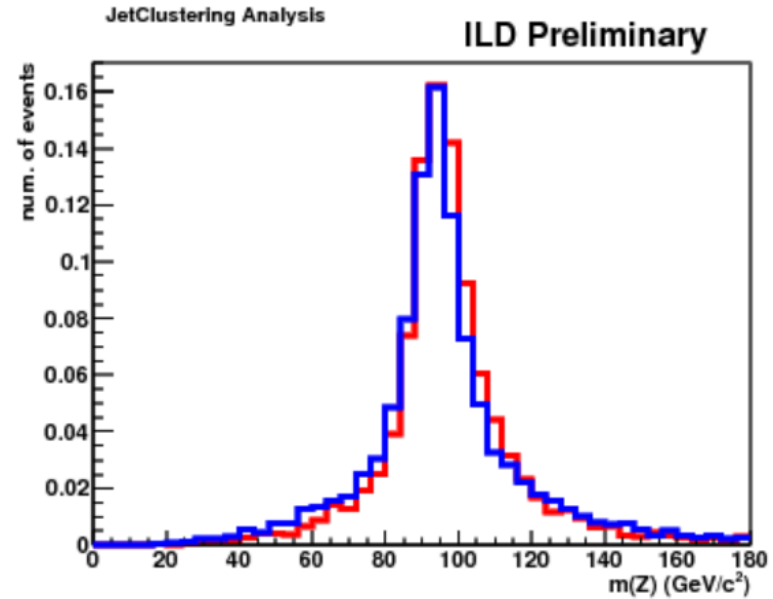
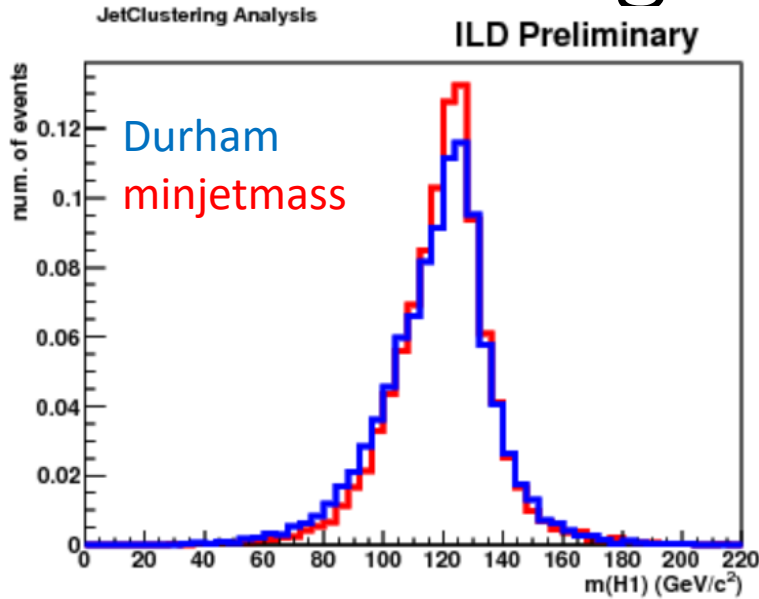
- Using the process of $ZH \rightarrow qq$
- We estimate the upper limit of statistical fluctuation of BR in the SM.

UL of BR [%] (95%CL)	Left polarization	Right polarization
only yields are floated	0.688	0.485
bkg shape also floated	0.930	0.786
previous study result	0.95	0.69

san's results

- Selection?

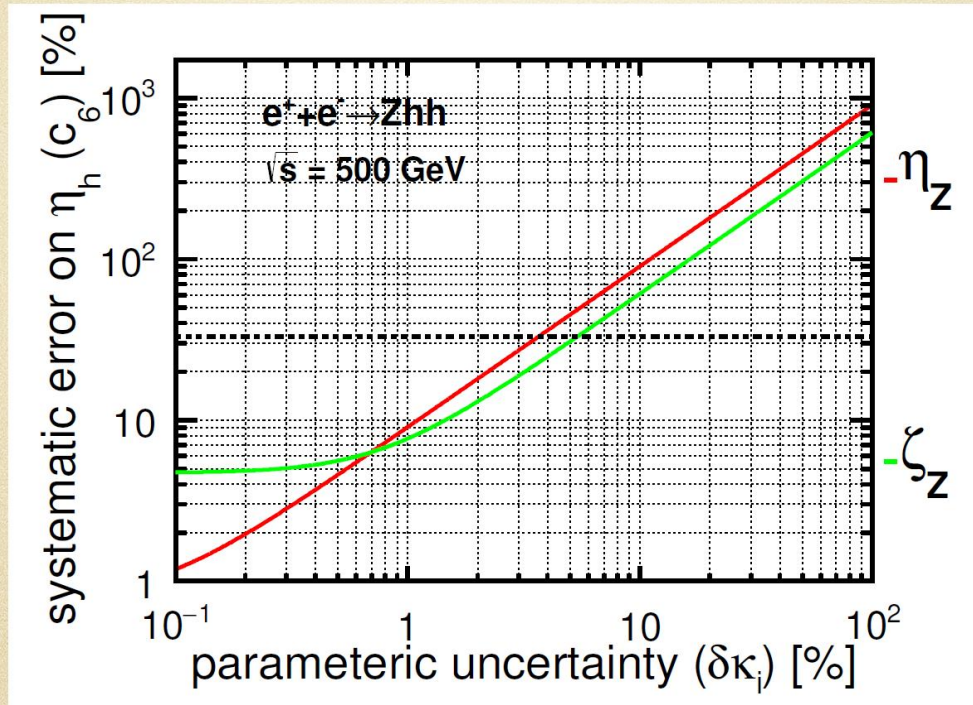
Jet clustering



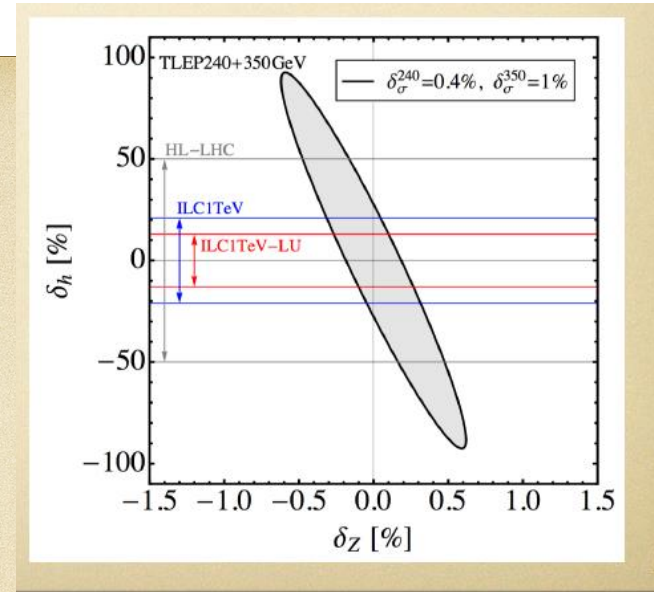
- Need to check each jets more precisely
 - Substructure
 - Energy fraction of each color singlet state
 - Compare with perfect jet clustering
 - etc.

Syst. Error of λ_{HHH}

update on sys. errors: take constraints from EFT



systematic error $\sim 5\%$ (preliminary)



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- ongoing studies for including anomalous $H\gamma\gamma$, $H\gamma Z$, $HH\gamma Z$ couplings, and strategy for CP-odd operators
- paper in preparation; see talk by Tim at LCWS16

mSUGRA test

- Test the deviation of $\Gamma(H \rightarrow \gamma\gamma)$ and $\Gamma(H \rightarrow gg)$
 - Will become large simultaneously
- Test the deviation of the ratio, $\Gamma(H \rightarrow \gamma\gamma)/\Gamma(H \rightarrow gg)$
 - Become large & almost same in mSUGRA parameters
- Correlation too strong? Seems that parameter is only one
- Strange jump of deviation value

Higgsino

Obtained statistical precisions for ALL channels of ILC1

- Assuming H20 : Mass : $\sim 0.2\%$, Cross section : neutralino: 1–1.5% , chargino: 0.3 –0.7%

results obtained in this study become
input to SUSY parameter determination

test GUT-scale physics and SUSY-breaking mechanism

full H20 run, three \sqrt{s}

S.-L. Lehtinen (DESY) et al

$$\begin{aligned}\Delta M_1 &= 1.5\% \\ \Delta M_2 &= 1.0\% \\ \Delta M_3 &= 11.6\% \\ \Delta \mu &= 0.1\% \\ \Delta \tan \beta &= 2.5\%\end{aligned}$$

- study effect of **jet energy resolution**

Possible improvement from identifying and removing ISR photons from jets

- Improve lepton tagging efficiency**

- assess a gap in di-electron invariant mass in SM bkg due to generator cuts

maybe need to generate major electron channel bkg with generator cut of $0.5 < M_{ee} < 4$ GeV

- begin **simulation and analysis for Mirage4_74_2 benchmark**

- continue working on **Higgsino paper which includes all three benchmarks** :

theory, analysis, and SUSY parameter extraction_