

This page documents the snowmass2013 activities from LPC in the Higgs group.

Overview

We plan to study the precision of the coupling measurements in both LHC and ILC.

- n-D fits in LHC
- 1D fits in LHC
- n-D fits in $ee \rightarrow Z(\ell)H(bb)$
- 1D fits in $ee \rightarrow Z(\ell)H(bb)$

ILC Target luminosity and machine parameters

250/fb at 250 GeV; 350/fb at 350 GeV; 500/fb at 500 GeV; 1000/fb at 1000 GeV

LHC Target Luminosities and sqrt(s)

300/fb at 14 TeV; 3000/fb at 14 TeV

LHC Based Analysis

Multidimensional fits

- Fits on the $2e2\mu$ channel
- The acceptance effects
- The $4e/4\mu$ interference effects

MC Samples

LHC MCSamples $H \rightarrow 4l$ analysis

LHC MCSamples VBF analysis

LHC MC Samples VH analysis

Fitting analysis

Follow this link [lhcfits](#)

VBF summary

VBF summary from Sara [☞](#)

ILC Based Analysis

Goal

- SM Higgs Analytical distributions
- Validate the new generator for other spin 0 hypotheses
- Multidimensional fits

Selections

- $p_t > 5$. and $l_{\text{etal}} < 2.4$ for all fermions in the final states
- Higgs ($b\bar{b}$) mass in the window of [115-140] GeV
- $Z(\ell\ell)$ mass window [81,101] GeV

Signal and background yields per/fb

- Proposed scenarios (with reference to Snowmass report [\[1\]](#))

Below numbers assume a 85% reconstruction efficiency, which should take care of the acceptance as well. The ZZ background is estimated as 1/10 of background. So these numbers should only be used after all the selections defined ahead.

sqrt(s)	XS	BR	XS*BR	lumi	Nsig (raw)	Nsig	Nbkg
250 GeV	240 fb	0.0673*0.577	9.35 fb	250 /fb	2337	2000	200
350 GeV	129 fb	0.0673*0.577	5.03 fb	350 /fb	1760	1500	150
500 GeV	57 fb	0.0673*0.577	2.22 fb	500 /fb	1110	1000	100
1000 GeV	13 fb	0.0673*0.577	0.505 fb	1000 /fb	505	500	50

MC Samples

Follow this page [\[ILCMCSamples\]](#)

Analysis Code

[ILCAngularAnalysis](#)

Seattle Report

[ILC results for Seattle Report](#)

Documentation and talks

- Andrei: Snowmass BNL meeting Overview of Higgs snowmass [\[1\]](#)
- Andrei: Spin 0 fitting parameters [\[2\]](#)
- YY: angular analysis overview [\[3\]](#)
- YY: ILC analytical angular distribution [\[4\]](#)
- YY: Fitting ILC signal samples [\[5\]](#)
- Andrew: Snowmass Seattle Report [\[6\]](#)

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