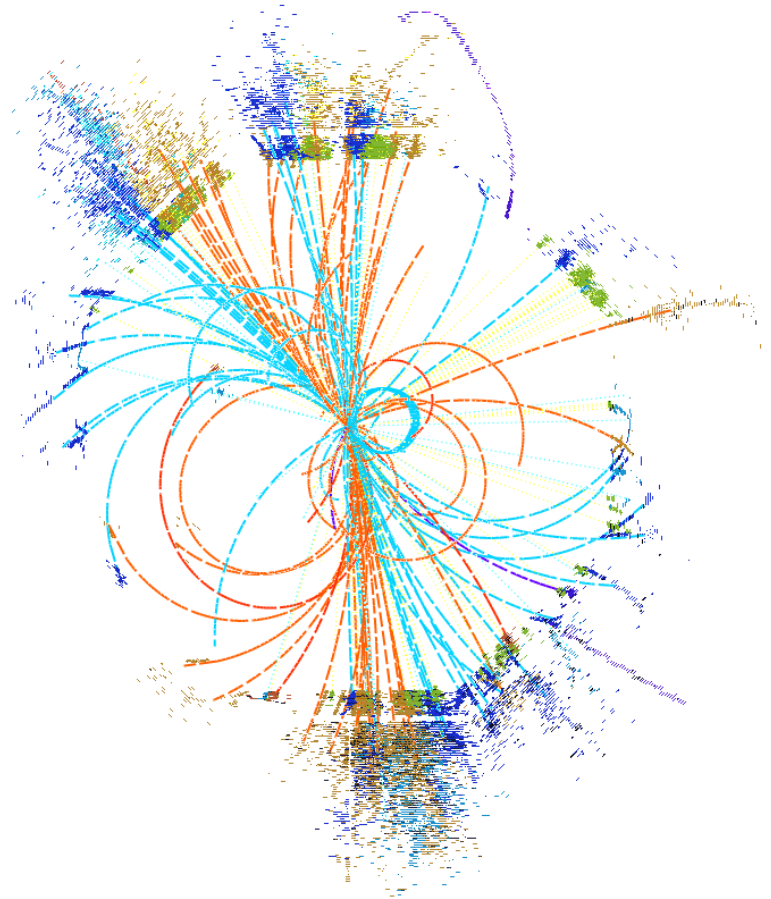


# Status of the Higgs paper

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CLICdp Collaboration Meeting, 02/06/2015, CERN

# Updated paper structure

- |   |                           |
|---|---------------------------|
| 1.) Introduction  | complete                  |
| 2.) Experimental Environment at CLIC                          | complete                  |
| 3.) Overview of Higgs Production at CLIC                      | complete                  |
| 4.) Monte Carlo, Detector Simulation and Event Reconstruction | complete                  |
| 5.) Higgs Production at $\sqrt{s} = 350$ GeV                  | some analyses ongoing     |
| 6.) WW-fusion at $\sqrt{s} > 1$ TeV                           | some analyses ongoing     |
| 7.) ZZ-fusion   | complete                  |
| 8.) Top Yukawa Coupling                                       | complete                  |
| 9.) Double Higgs Production                                   | some numbers missing      |
| 10.) Higgs Mass   | analyses ongoing          |
| 11.) Combined Fits  | waiting for final numbers |
| 12.) Summary and Conclusions                                  | waiting for final numbers |

# Current status

Most of the comments collected during the last CLIC workshop at the end of January 2015 have been implemented.

## Remaining issues:

- The analyses of  $H \rightarrow b\bar{b}/c\bar{c}/gg$  at all energies and  $H \rightarrow WW^*$  at 350 GeV are still work in progress (Sec. 5.2.1, 5.2.3, 6.1 and 10).
- The event displays for CLIC\_SiD (Figs. 17 and 21) will be redone.
- A few figures still need to be adapted to the common CLICdp style.
- Section 11 on combined fits still describes the numbers shown at LCWS14. This will be updated once all analyses are finalised.

## Nightly builds:

<http://proloff.web.cern.ch/proloff/clichiggspaper/>

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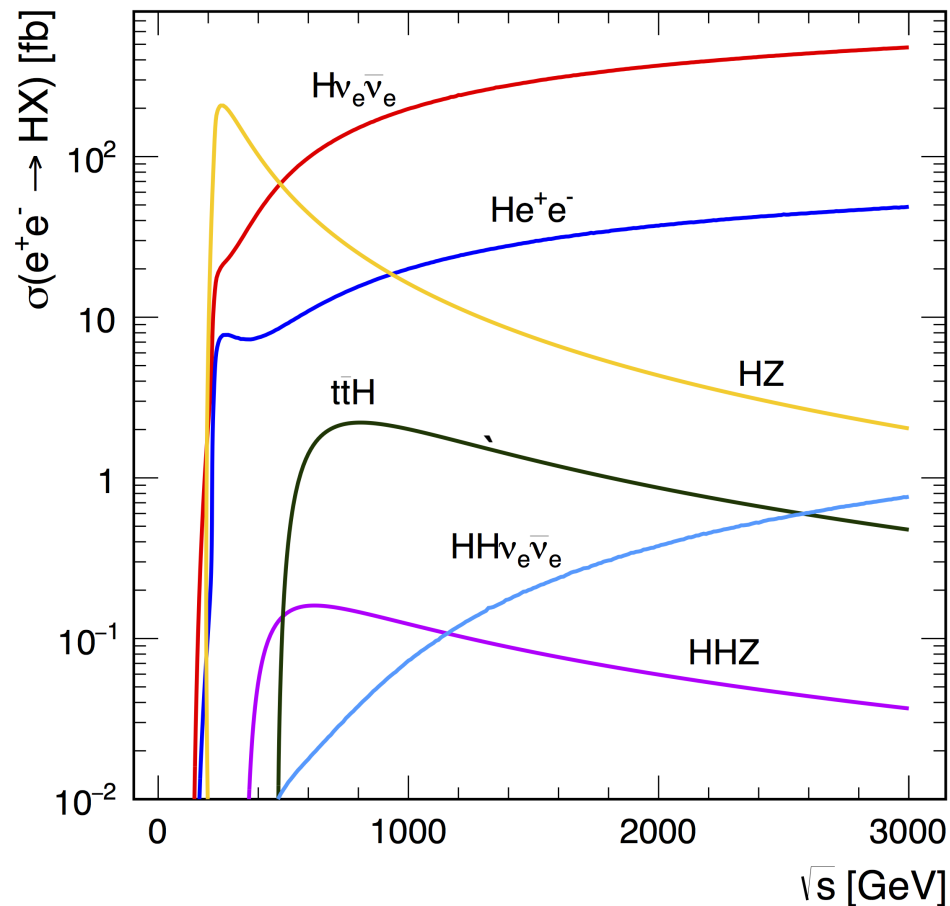
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Thanks a lot Michael!

# Consistent Higgs mass

All numbers, tables and figures in the introductory part (Sec. 1 - 4) were updated assuming  $m(H) = 126 \text{ GeV}$



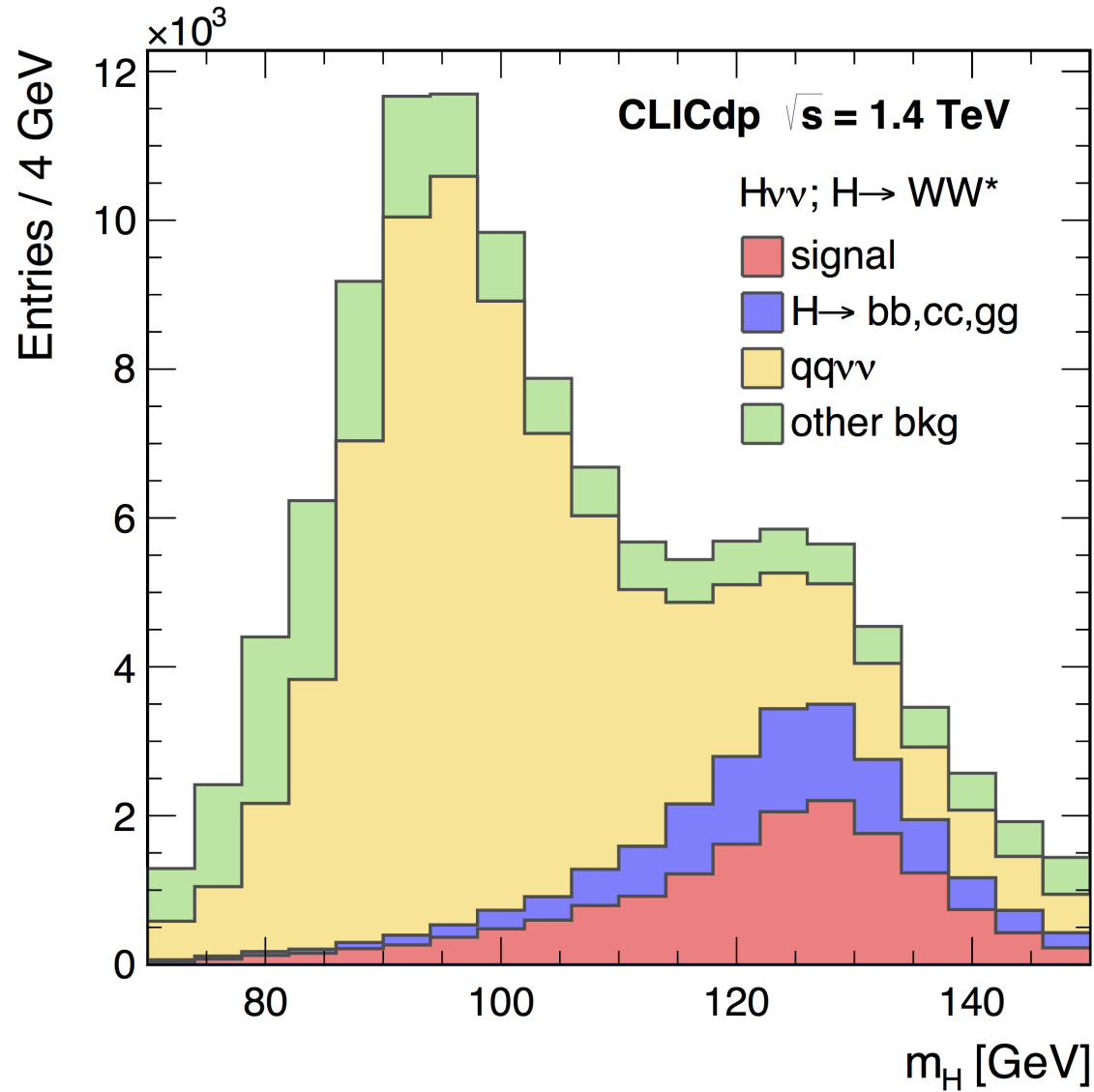
**Example:** cross sections for various Higgs production Processes (also ISR included now!)

# New table style

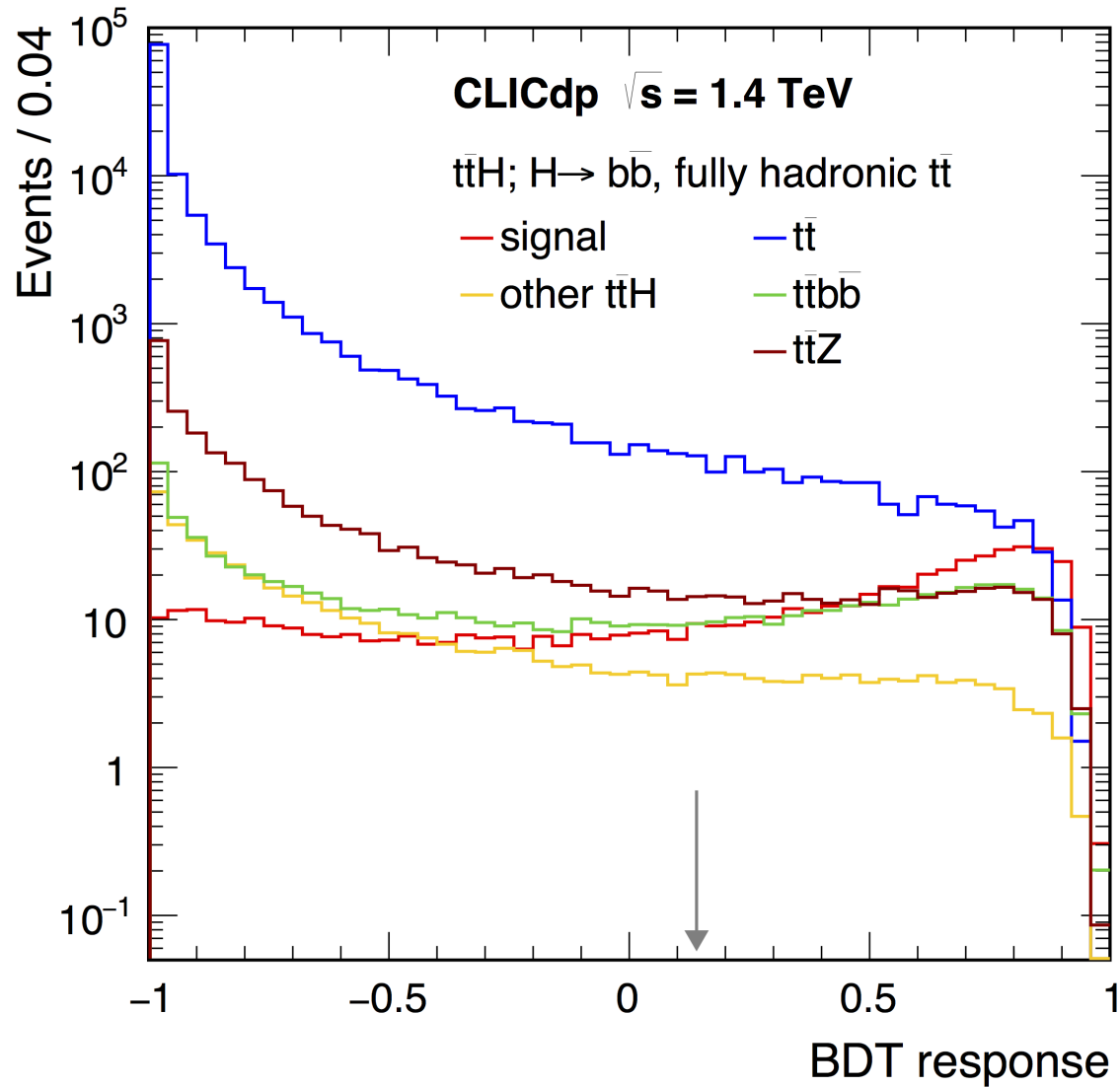
Process	$\sigma/\text{fb}$	$\epsilon_{\text{preSel}}$	$\epsilon_{\text{BDT}}$	$N_{\text{BDT}}$
$e^+e^- \rightarrow H\nu_e\bar{\nu}_e, H \rightarrow \gamma\gamma$	0.56	84.9%	40.4%	337
$e^+e^- \rightarrow \nu\bar{\nu}\gamma$	29.5	34.2%	2.5%	1110
$e^+e^- \rightarrow \nu\bar{\nu}\gamma\gamma$	17.3	31.0%	2.6%	688
$e^+e^- \rightarrow \gamma\gamma$	27.2	19.8%	0.14%	55
$e^+e^- \rightarrow e^+e^-\gamma$	289.0	9.2%	0.06%	265
$e^+e^- \rightarrow e^+e^-\gamma\gamma$	12.6	5.2%	0.01%	2
$e^+e^- \rightarrow q\bar{q}\gamma$	67.0	0.8%	0.0%	0
$e^+e^- \rightarrow q\bar{q}\gamma\gamma$	16.6	1.4%	0.01%	2

**Example:**  $H \rightarrow \gamma\gamma$  at 1.4 TeV

# New figure style (1)



# New figure style (2)





Comments and  
suggestions  
are very welcome!