Hadronic branching ratios of the Higgs: H-->bb/cc/gg

Short description.

Measurement of Higgs coupling to heavy quarks (Higgs decay to gluons is mediated by heavy quark loops.)

These studies were previously done focused on sqrt(s)=250 GeV with ZH and Zll.
For this study at 500 GeV, the study should at least be done with nu-nu-H (WW-fusion and ZH) which is a clean experimental benchmark.
(For physics the ZH channel with Zqq would also be worth studying as it is likely the most powerful for physics and
at 500 GeV benefits from the relatively unambiguous jet pairing).

Main observables.

BR(Hbbar, ccbar, gg)/BR from (*BR)/(*BR) and / measurements.

Control variables.

b-tag, c-tag, JER, M_H

People.

Masakazu Kurata, Ryo Yonamine

Referees.

Hiroaki Ono, Frank Simon

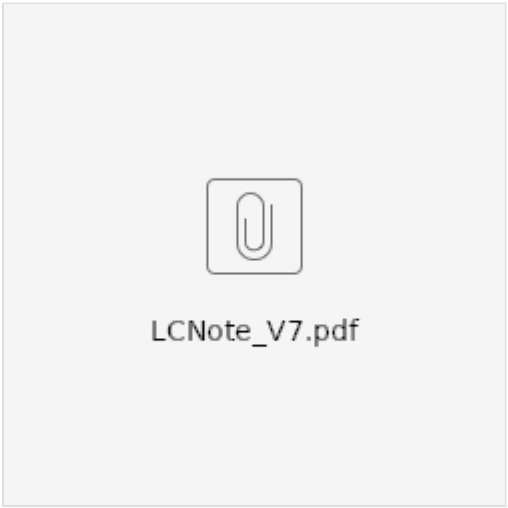
Git repository.

https://github.com/MasakazuKurata0227/ILDbench_Hbbccgg/tree/newFeature

IDR analysis note on Overleaf

https://overleaf.com/read/bkhrbnxsckjm

Current version of analysis note 2020-01-09 V7



Candidate plots for IDR

Update plots and code at 2020-01-09

IDRplot1.eps

IDRplot1.C

IDRplot1.pdf

IDRplot2.C

IDRplot2.eps

IDRplot2.pdf

IDRplot5.eps

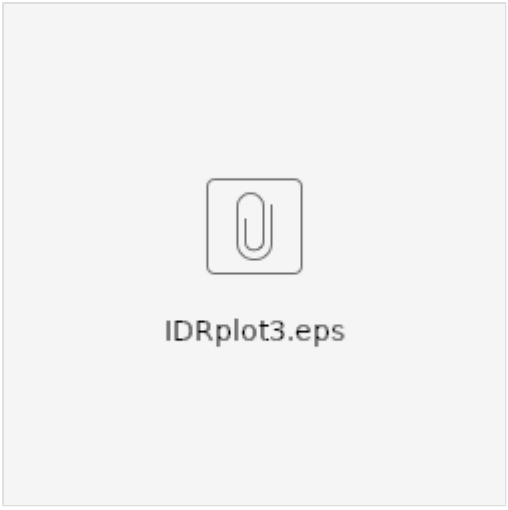
IDRplot5.C

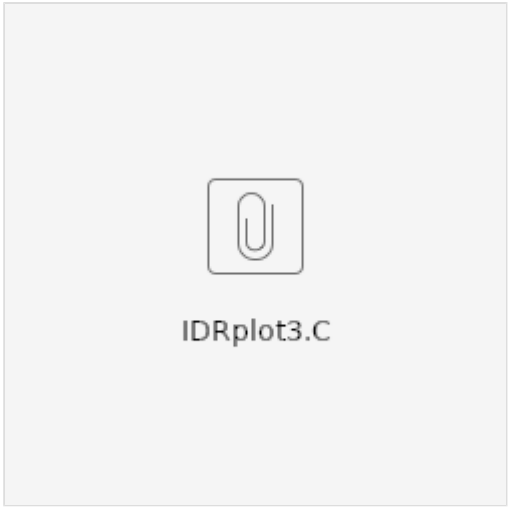
IDRplot5.pdf

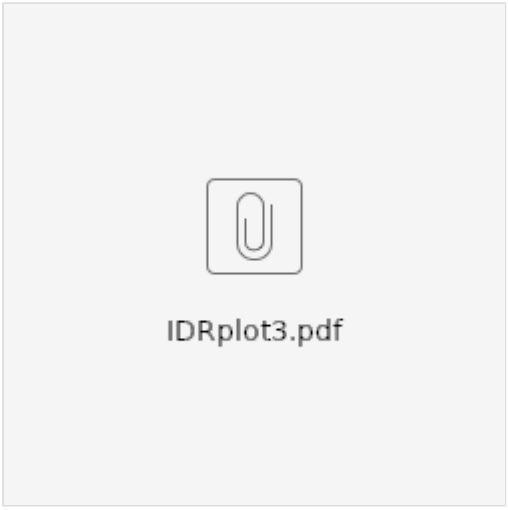
IDRplot4.eps

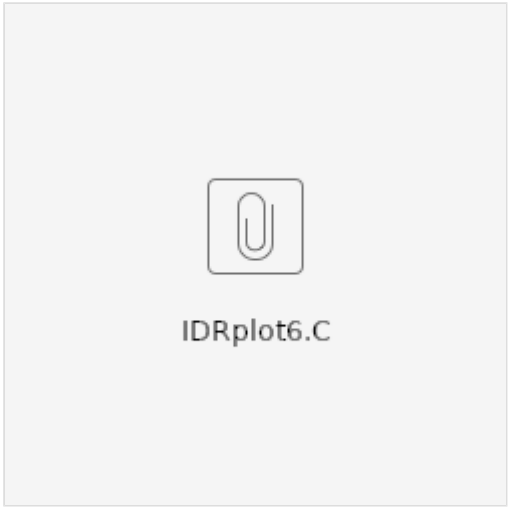
IDRplot4.C

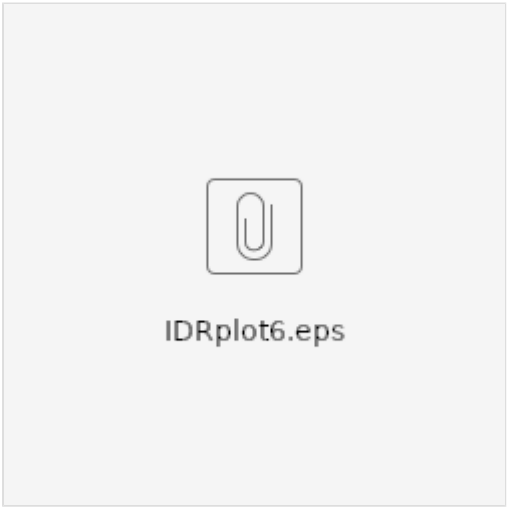
IDRplot4.pdf

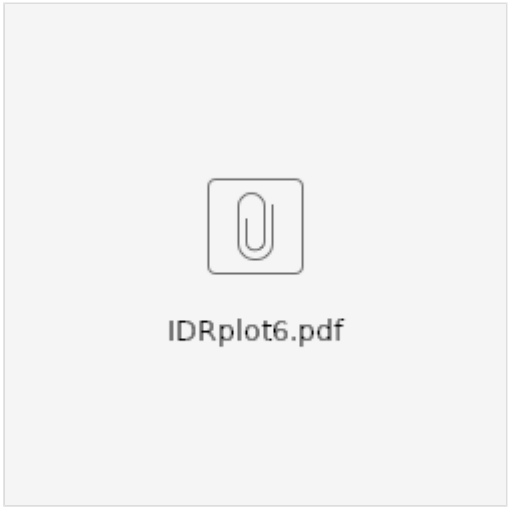






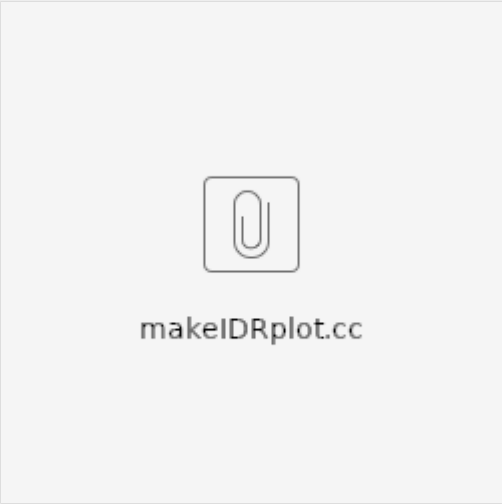


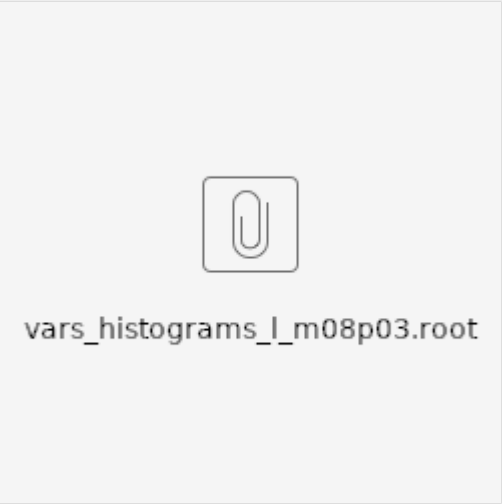


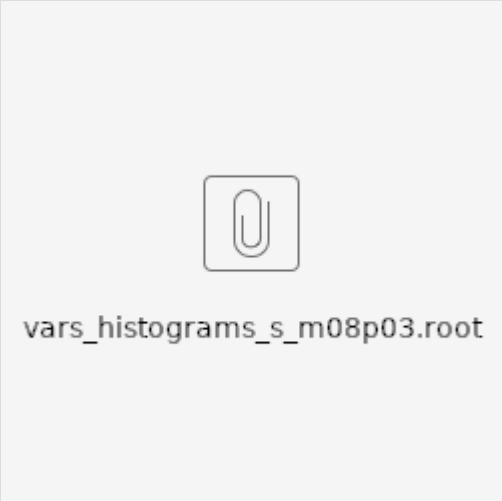


Source of the plots

Updated 2020-01-09







References.

H. Ono, A. Miyamoto, "Evaluation of measurement accuracies of the Higgs boson branching fractions in the International Linear Collider", https://arxiv.org/abs/1207.0300

H. Ono, "Higgs branching ratio study for DBD detector benchmarking in ILD", http://inspirehep.net/record/1475550/files/1238328_203-223.pdf

M. Kurata, presentaion at Benchmarking Days, https://agenda.linearcollider.org/event/8011/contributions/42069/