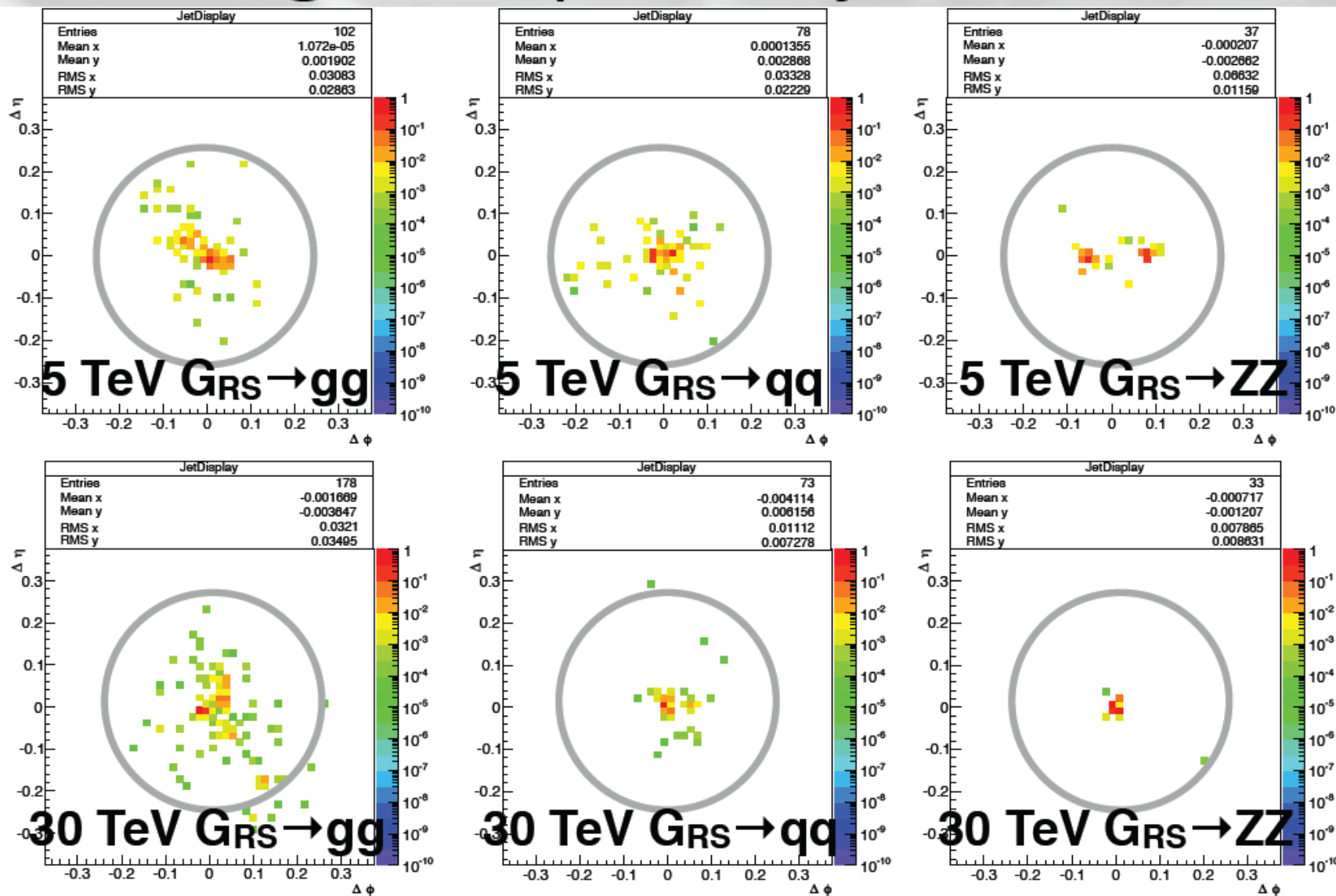


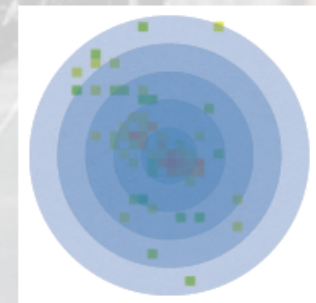
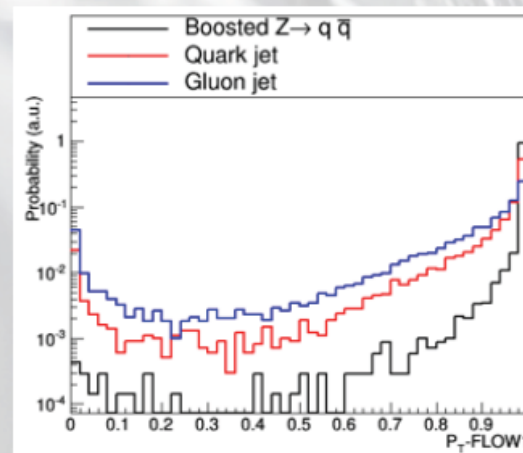
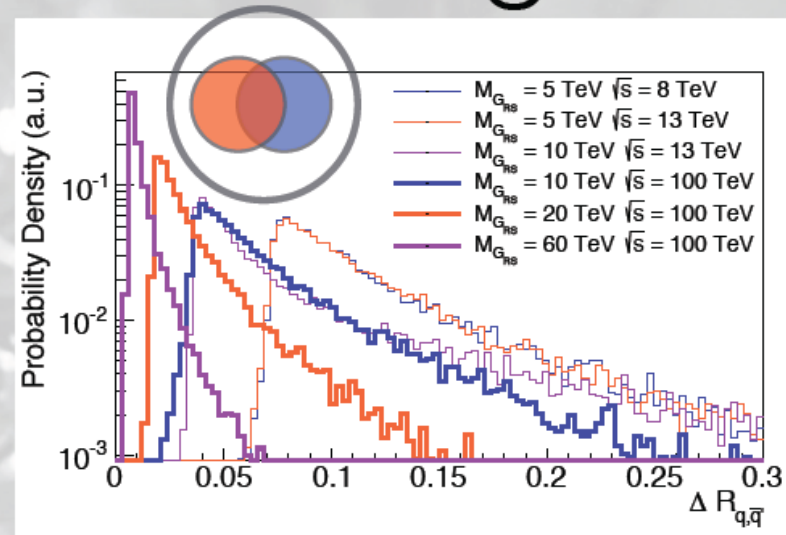
すみません。。。。

g vs q vs Z jets



V-tagging: Two Strategies

- **At small masses**, look for two subjets inside the jet
- granularity requirement dictated by subjet separation
- **At large masses**, look for jets with all particles at centre
- granularity dictated by how collimated the jet is



$$P_T\text{-FLOW}^i = \frac{\sum_{p \in C_i} |\vec{P}_T^p|}{|\vec{P}_T^{JET}|}$$

Exclusive Higgs boson decays

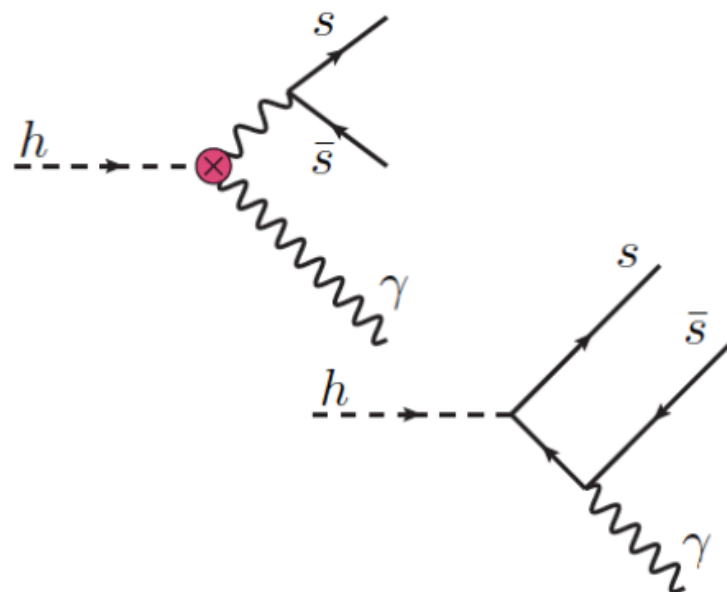
➔ First and second generation couplings accessible

- Study of $\rho\gamma$ channel most promising; expect ~ 50 evts.
- Sensitivity to u/d quark Yukawa coupling
- Sensitivity due to interference

$$\frac{\text{BR}_{h \rightarrow \rho\gamma}}{\text{BR}_{h \rightarrow b\bar{b}}} = \frac{\kappa_\gamma [(1.9 \pm 0.15)\kappa_\gamma - 0.24\bar{\kappa}_u - 0.12\bar{\kappa}_d]}{0.57\bar{\kappa}_b^2} \times 10^{-5}$$

➔ Also interesting to FCC-hh program

➔ Alternative $H \rightarrow MV$ decays should be studied ($V = \gamma, W, \text{ and } Z$)



$H \rightarrow J/\psi \gamma \rightarrow y_c$

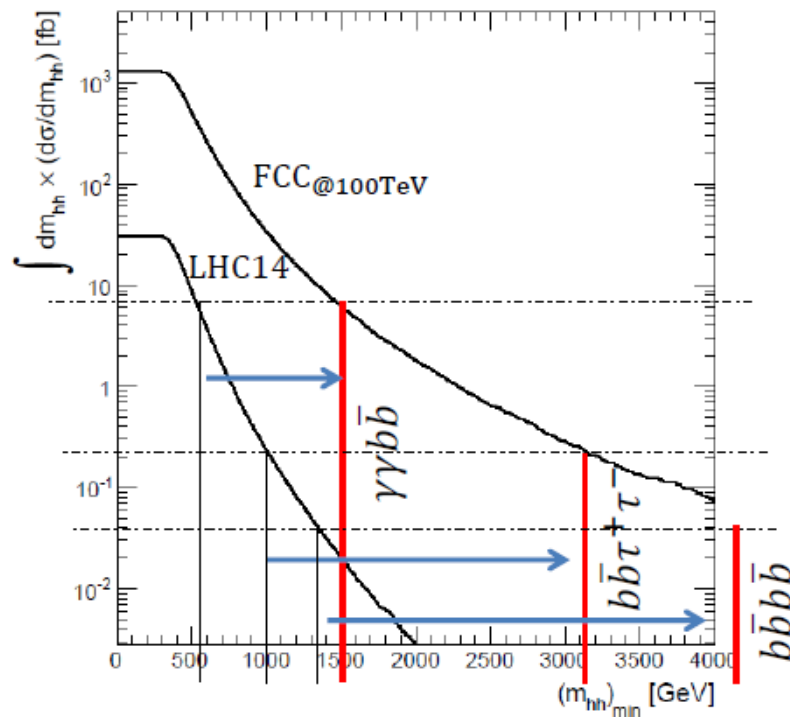
$H \rightarrow \phi \gamma \rightarrow y_s$

$H \rightarrow \rho \gamma \rightarrow y_u, y_d$

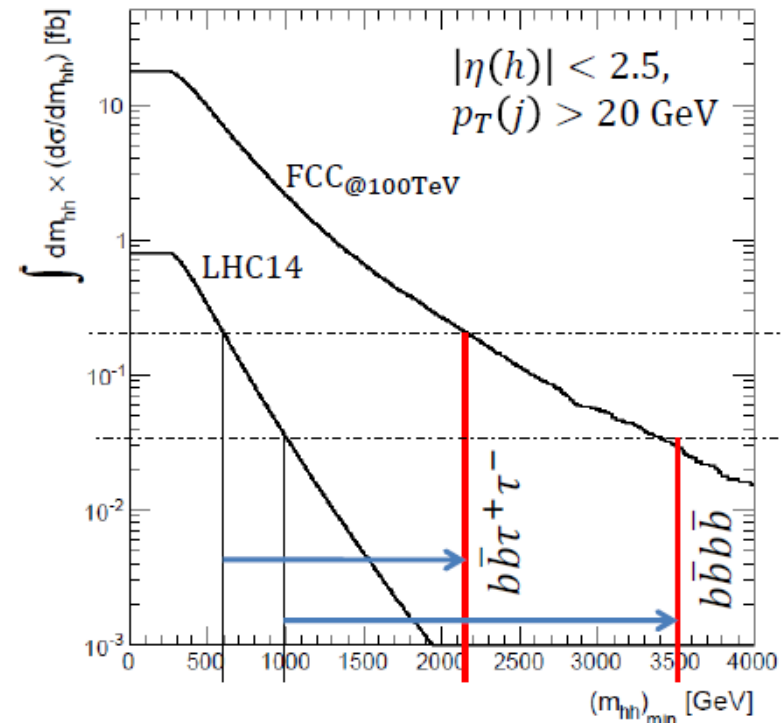
$H \rightarrow \omega \gamma$

Capability of probing new physics scale

Signal (SM) *hh* via gluon fusion



Signal (SM) *hh* via VBF

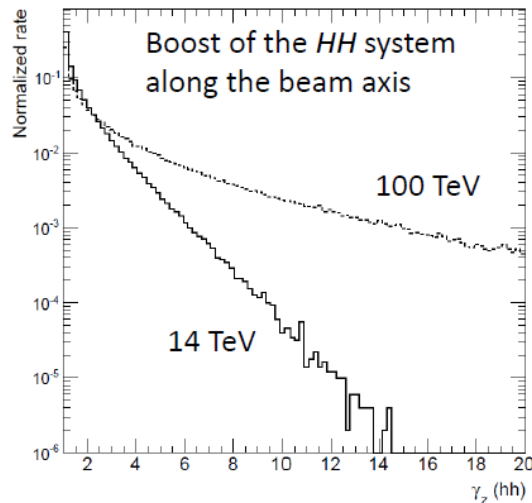


$$\sigma \geq \frac{5 \text{ Events}}{\text{BR}(hh \rightarrow X) \times \epsilon_S \times 3000 \text{ fb}^{-1}}$$

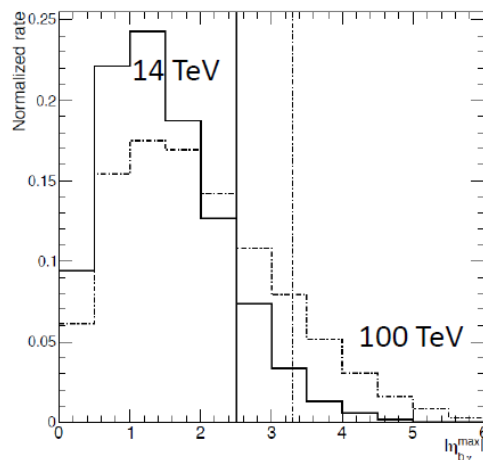
assuming 10 % signal efficiency

どんだけForwardがいるのか。。

$gg \rightarrow HH$ Large imbalance
 in x_i, x_j in gluon PDF

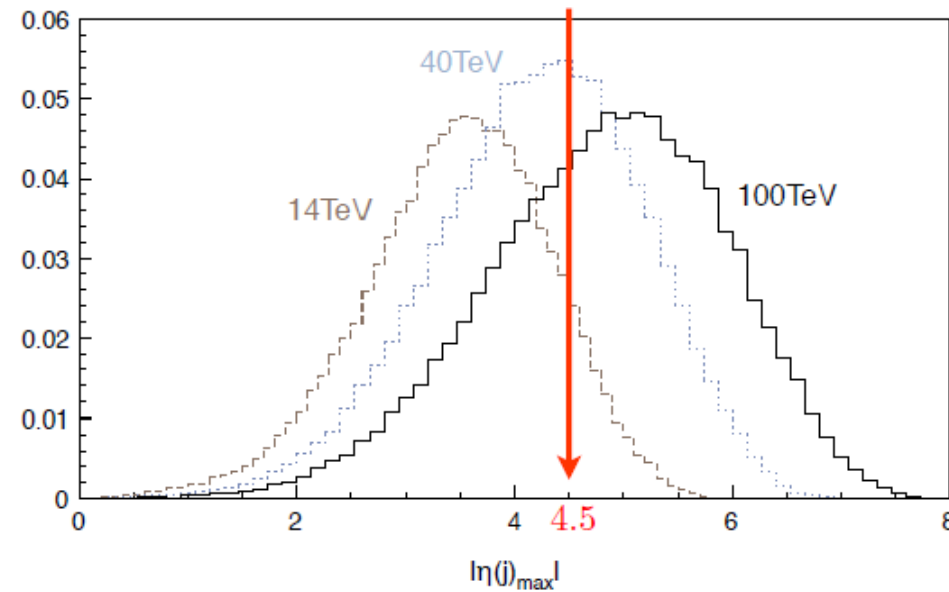


Signal (SM) (14 TeV vs 100 TeV)



$VV \rightarrow HH$

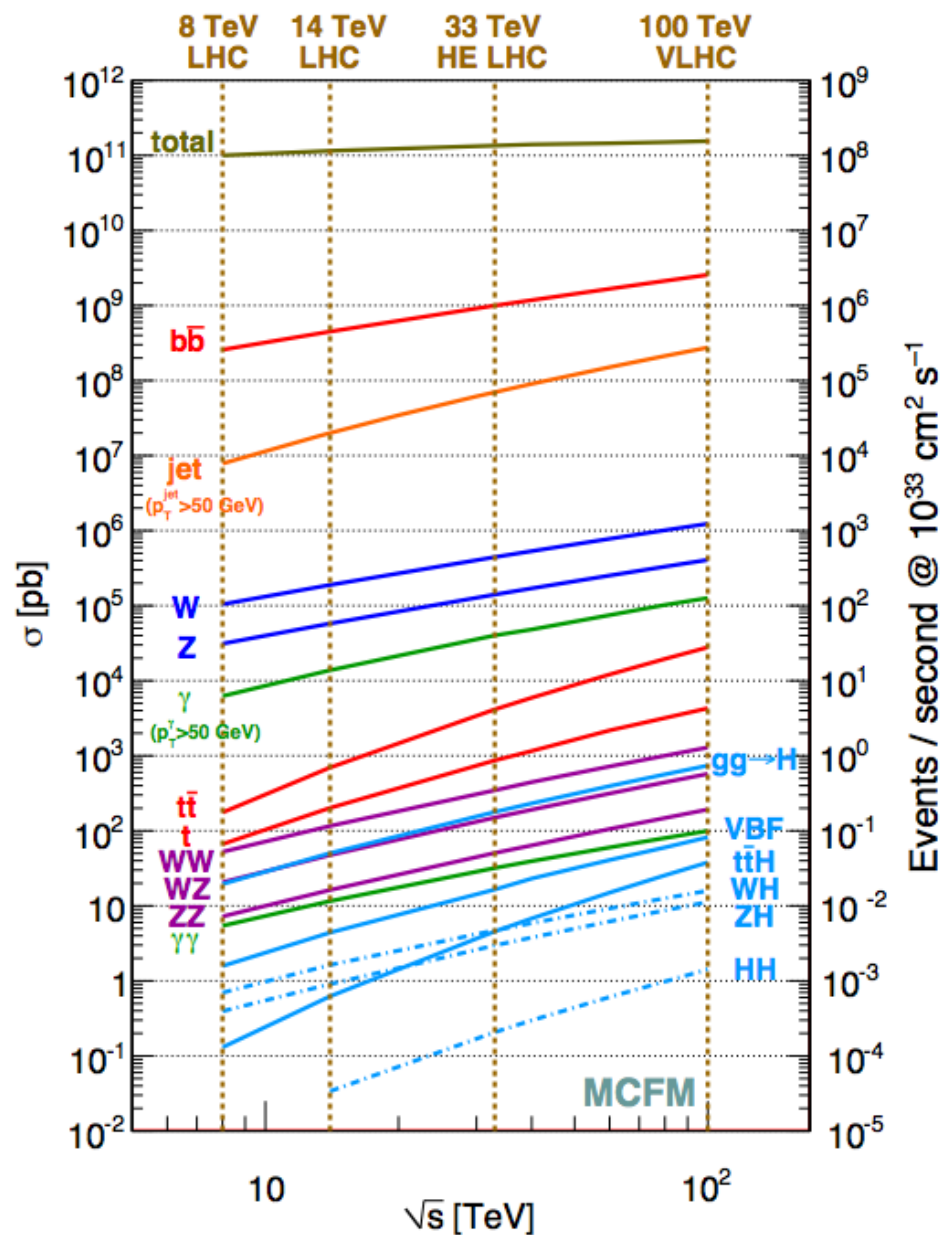
~67% of signal events at
 100TeV has $|\eta(j)_{\max}| > 4.5$



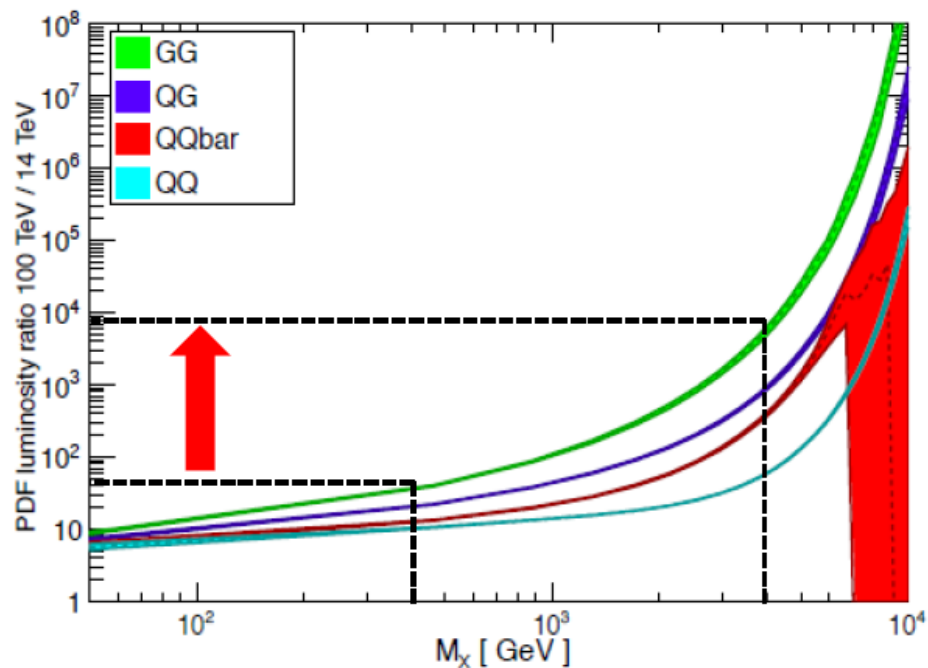
~30% of signal events $|\eta| > 2.5$ (v.s. ~13% at the LHC)
 Needs to extend to 3.3 to keep same fraction as the LHC

あたりまえだけど。。

- 100 TeVでいいのか。。。
 - ILCの二の舞にはならないようには？
 - 高い
 - 時間がかかる
- この2点は同じ。いつでも新しい物ができたらそっちの方が良くなる。

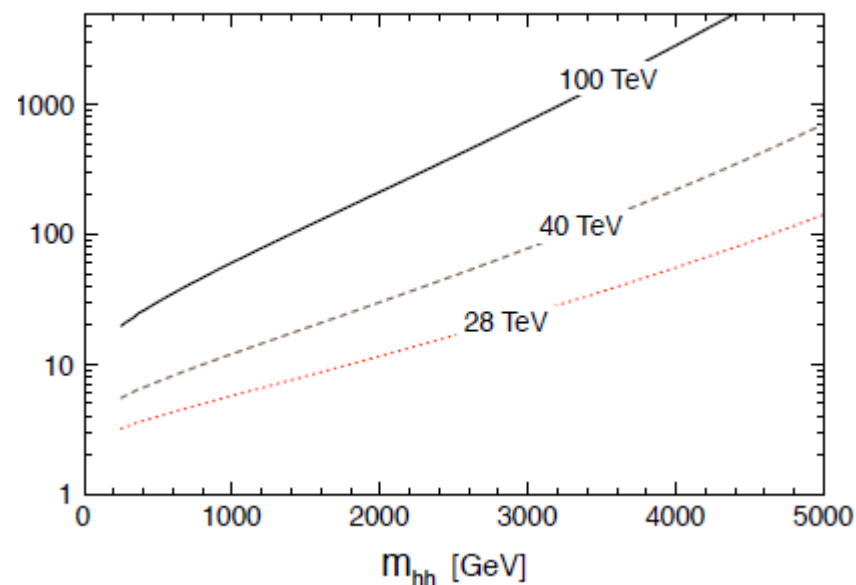


100 TeV vs 14 TeV PDF Luminosities, NNPDF2.3 NNLO



Talk by J. Rojo, given at
Future Circular Colliders Meeting, CERN, 27.01.2014

WW luminosity ratio



R. Contino, talk given at
1st Future Hadron Collider Workshop CERN, May 26-28, 2014