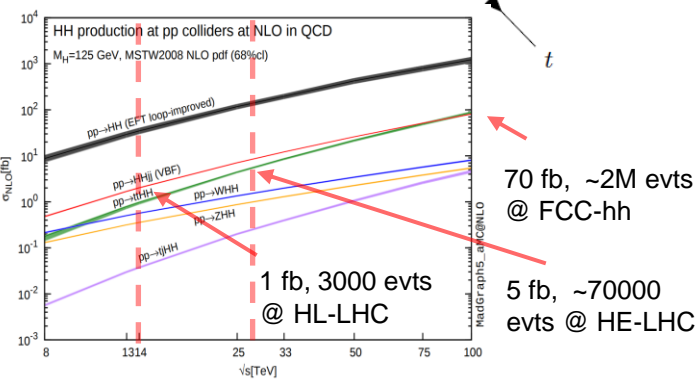
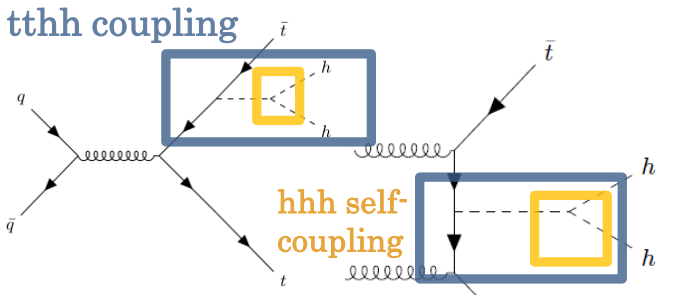


Collider study of the $t\bar{t}h$ channel

Lingfeng Li (Brown U) w/ Yingying Li & Tao Liu, Sep. 15, Top 2021
 Based on arXiv:1905.03772, Phys. Rev. D101, 055043 (2020)

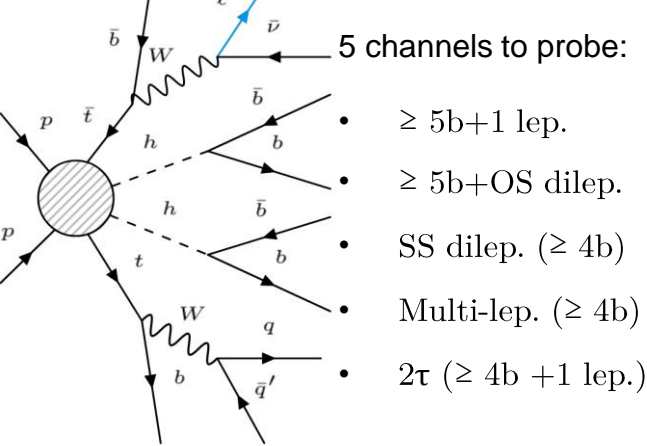
INTRODUCTION



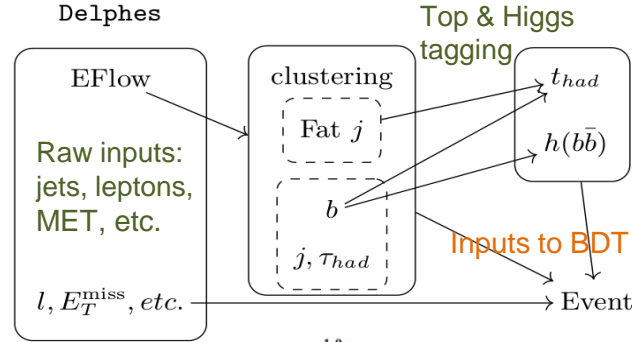
FRAMEWORK

HEFT basis:

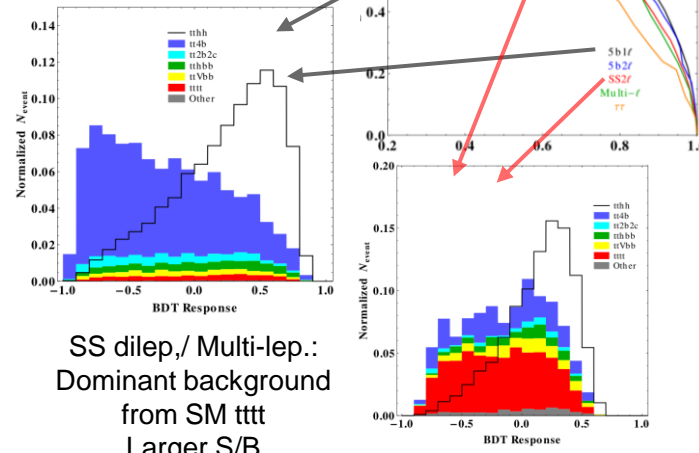
$$\mathcal{L} \supset -y \frac{m_t}{v} t\bar{t}h - \kappa \frac{1}{3!} \frac{3m_t^2}{v} h^3 - c_t \frac{1}{2!} \frac{m_t}{v^2} t\bar{t}hh$$



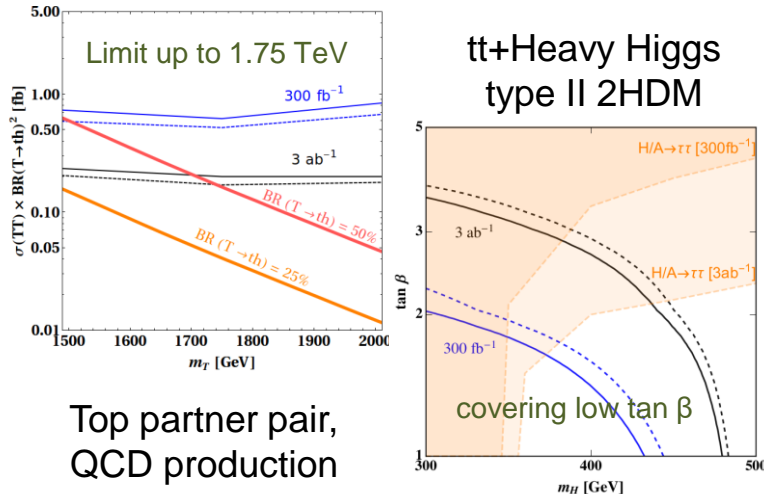
ANALYSIS



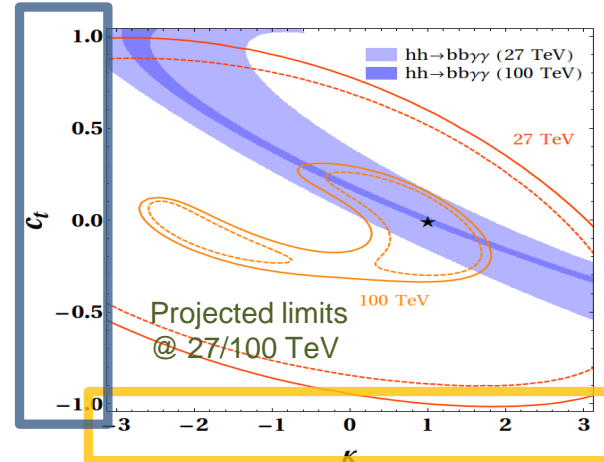
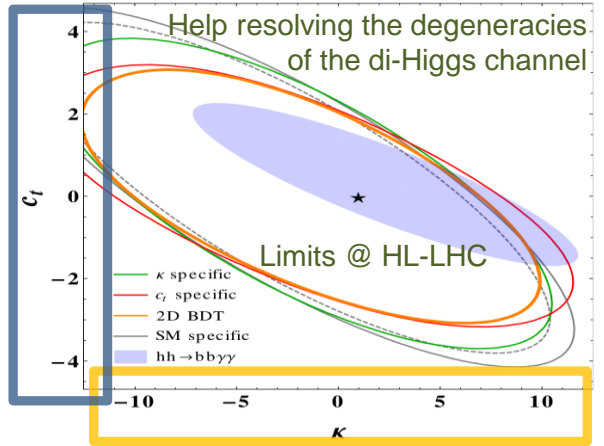
Multi $b + 1$ lepton contributes the most Largest statistics & large QCD bkg.



RESONANCE SEARCHES



CONCLUSION



REFERENCES

[1] R. Frederix, S. Frixione, V. Hirschi, F. Maltoni, O. Mattelaer, P. Torrielli, E. Vryonidou, and M. Zaro, *Higgs pair production at the LHC with NLO and parton-shower effects*, Phys. Lett. B732 (2014) 142[149, [arXiv:1401.7340](#)].

[2] T. Liu and H. Zhang, *Measuring Di-Higgs Physics via the $t\bar{t}h \rightarrow t\bar{t}b\bar{b}$ Channel*, [arXiv:1410.1855](#).

[3] C. Englert, F. Krauss, M. Spannowsky, and J. Thompson, *Di-Higgs phenomenology in $t\bar{t}h$: The forgotten channel*, Phys. Lett. B743 (2015) 93[97, [arXiv:1409.8074](#)].

[4] ATLAS Collaboration, *Prospects for Observing $t\bar{t}HH$ Production with the ATLAS, Experiment at the HL-LHC.* ATL-PHYS-PUB-2016-023, 2018.

LINK TO THIS WORK