

LHC HWG1 plenary session - Introduction

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Preparation for YRS & timeline

- **➡** June 2024: kick-off meeting: <u>WGI agenda</u>
- October 2024: update and priority definition: WGI agenda
- October 2024: YR5 cross-section update summary: WGI meeting
 - cross-section update as one of the YR5 contributions proposed by WG1 (all production mechanisms in a single document). Ad-interim note: <u>arXiv</u>. Updated numbers created and being collected in spreadsheet
- December 2024: LHCHWG general assembly (today)
- **■** June 2025: first deadline for priority projects for SciPost submission
 - additional WG I/sub-group meetings will be organised to review development of the projects before the June deadline
 - general guideline for community reports: twiki
 - SciPost Physics Community report: https://scipost.org/SciPostPhysCommRep/about
- Further submission deadlines after June 2025



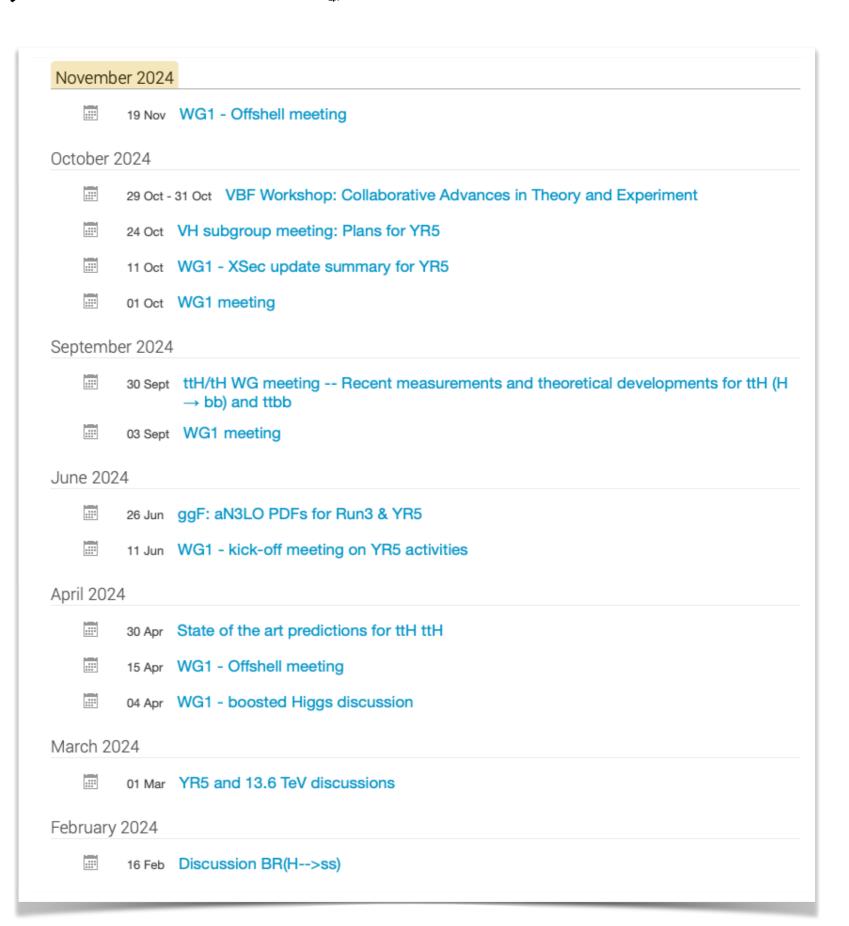
YR5: WG1 projects for June 2025

- **➡** Identified priority projects for YR5 intended to be finalised by June 2025
 - ▶ **WGI**: updated cross-section predictions for all Higgs boson production modes
 - **gluon fusion**: the impact of N3LO PDF's on the ggF cross-section
 - **VBF**: differential and parton shower studies of VBF signal / harmonising fiducial definitions
 - ▶ **VBF**: ggF contribution in VBF phase-space
 - **VH**: differential NLO for ggZH, inclusion of differential k-factor in Powheg
 - **ttH**: NNLO cross-section update and comparisons among resummation schemes at NNLL
 - Off-shell: parton shower and jet merging benchmarking studies
 - **BR**: include Dalitz decay in Hdecay
- **■** Larger set of projects is in planning stage by WGI and could result in further contributions to YR5 at a later time
- ➡ These projects will be discussed in detail in WGI plenary sessions and also during YR5 lightning talk session on Friday



WG1 group activities beyond YRS

- Several ongoing activities beyond YR5 discussed in WGI group and subgroup meetings since the last LHC HWG workshop
 - theoretical and experimental developments for each WGI sub-group will be covered during WGI plenary sessions
 - dedicated highlights on experimental results with focus on modelling choice along with theory lightning contributions discussed during WGI parallel session tomorrow

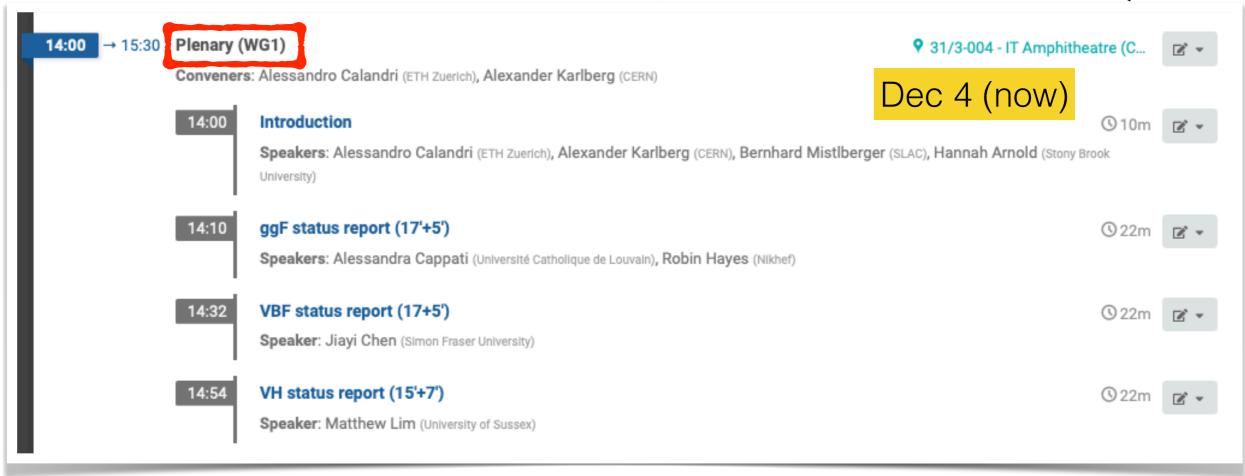


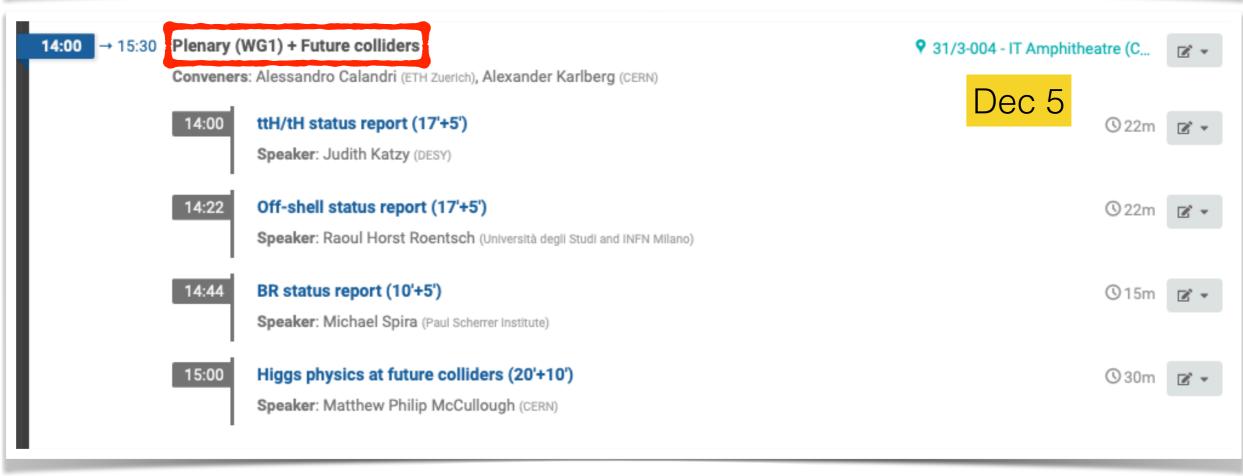


LHC Higgs WG1 open calls

- Two TH WGI sub-group conveners are stepping down please send us (WGI conveners) nominations
 - TH off-shell convener replacing Eleni Vryonidou and joining Raoul Roentsch
 - THVH convener replacing Giancarlo Ferrera and joining Matthew Lim
- → Many thanks Eleni and Giancarlo for your contributions and coordination of the off-shell and VH groups!

WG1 contributions at LHC Higgs WG workshop





WG1 contributions at LHC Higgs WG workshop

09:00 → 12:02 WG1 par	allel session s: Alessandro Calandri (ETH Zuerlch), Alexander Karlberg (CERN)	• 40/S2-A01 - Salle Anderson (C	€ •
09:00	Higgs+charm ATLAS (10'+10') Speaker: Elliot Reynolds (University of Kansas)	Dec 5	€ *
09:20	Higgs+charm CMS (10'+10') Speaker: Tiziano Bevilacqua (University of Zuerich)	③ 20m	€ *
09:40	yt-induced Hbb as a background for HH searches (17'+5') Speaker: Marco Zaro (Università degli Studi and INFN Milano)	○ 22m	€ *
10:02	ttHbb highlights/summary of the WG1 - ttH/tH workshop (10'+10') WG1 ttH/tH workshop: https://indico.cern.ch/event/1440845/ Speaker: Matthias Schroeder (University of Hamburg)	○ 20m	₫ ▼
10:22	Updated ttHbb results ATLAS (10'+10') Speaker: Alexander Froch (Université de Genève)	○ 20m	€ •
10:42	VHcc ATLAS+CMS focusing on modelling uncertainties (20'+10') Speaker: Zhuoran Feng (Nikhef)	③ 30m	₫ •
11:12	VHbb ATLAS+CMS focusing on modelling uncertainties (20'+10') Speaker: Christina Reissel (MIT)	③ 30m	€ *
11:42	PDF uncertainties on predictions for Higgs production in gluon-gluon fusion (15'+5') Lightning talk Speaker: Maria Vittoria Garzelli (University of Hamburg)	○ 20m	€ •

WG1 contributions at LHC Higgs WG workshop

