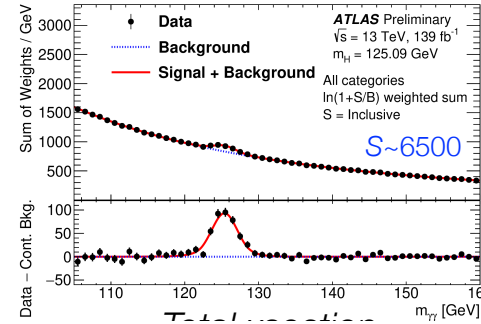# H(125) bosonic decays
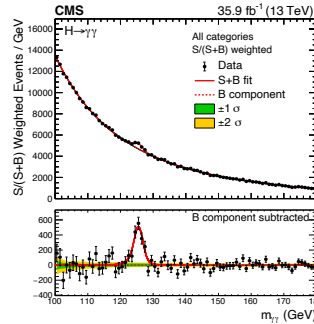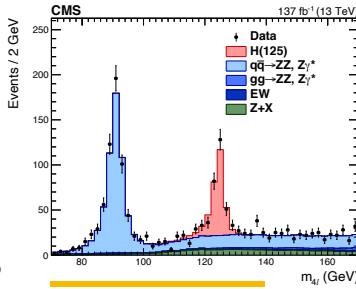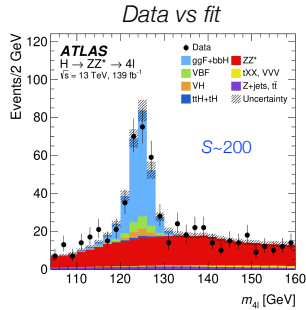
Paris Sphicas
CERN & NKUA (Athens)
HiggsHunting 2021, Paris-on-the-net

Comparison and questions
(approximately) 3 slides
(plus current one)

❑ **Mass peaks are now the introduction to the talk(s)**

  o **Spoilt by the very large peaks we got used to; one might even muster the necessary impertinence to call H mass measurements "standard"**

Mass comb:
C: 125.38±0.14
A: 124.97±0.24
A update from
ZZ*

  o **Is there more to learn here? (other than small shift in H→γγ peak at high p_ for the (much) longer term…**

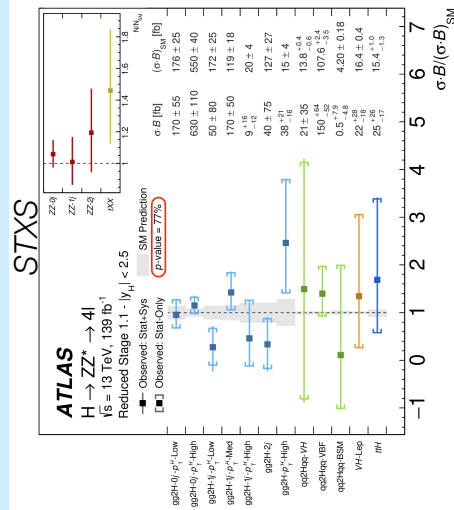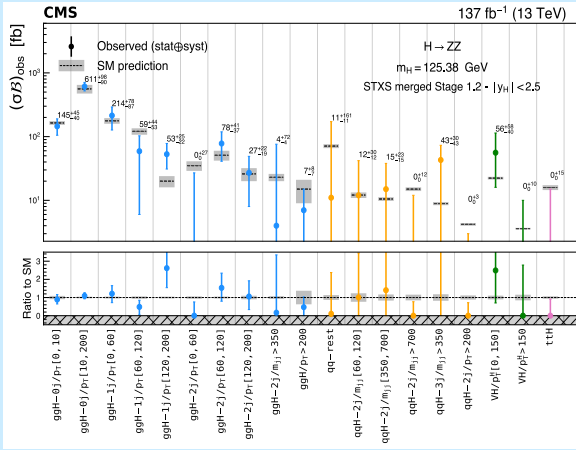❑ **The name of the game is STXS, fiduci**   **eminde**

Stage 0: closest to μ in Run1. One bin/produ   **ZH, ggZl**
Stage 1: intermediate time scale; finer binnin
Stage 2: asymptotic binning, after experienc   **defined**
Intermediate stages: 1.1 and 1.2 (increasing   **)**

H→ZZ*

STXS: Slightly finer binning for CMS ("stage 1.2 vs 1.1")

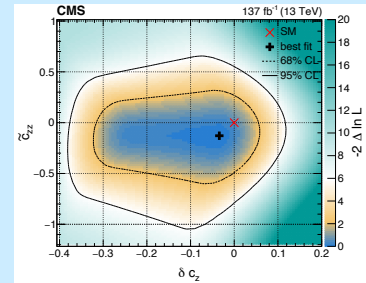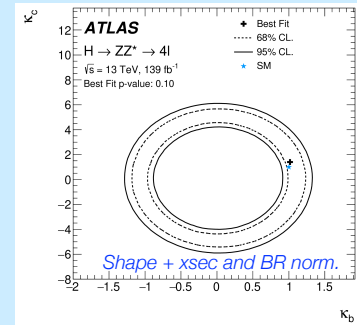**Albeit with some bin merging (and even some empty bins)**

Fiducial/differential xsecs

Sensitivity to VBF+VH/ttH not there yet

$\kappa_{c/b}$ & SMEFT

Not only SM measurements but also search for CP violation and anomalous couplings

No hollers; Statistics limited

Can we agree on whether we plot absolute σ.B or ratio of (σ.B) Exp/Theory?

Inclusive signal strength modifier (μ)

Production mode xsections
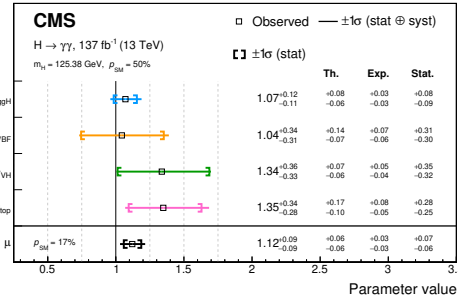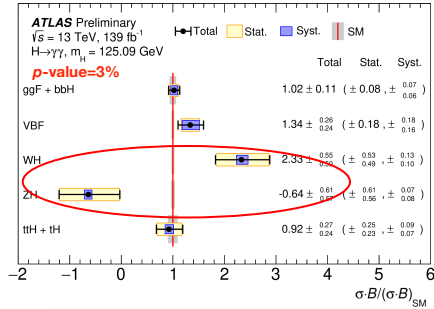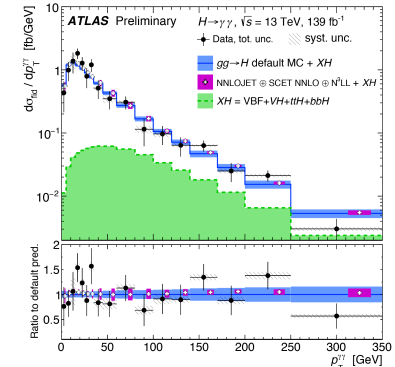
A: WH+ZH, anticorrelated; C: no dedicated VH analysis

Fiducial/differential σ
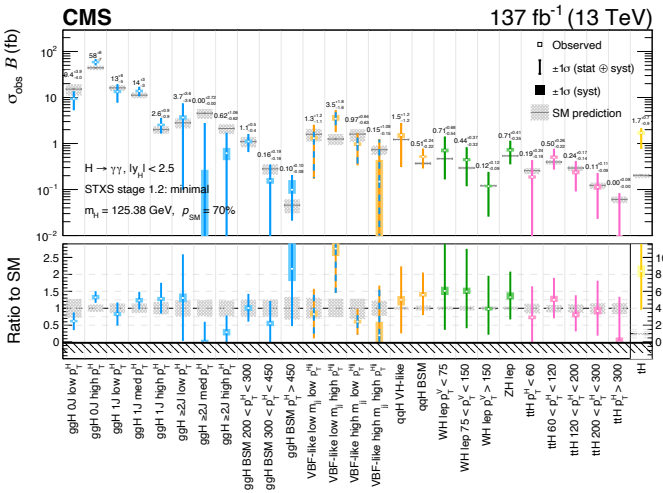
STXS: stage 1.2 for both A & C; Stat limited [though not for incl. ggH & VBF; and 0-jet VH]
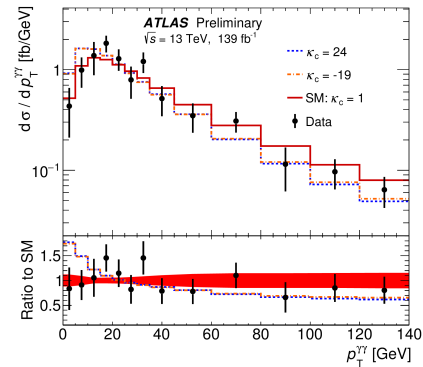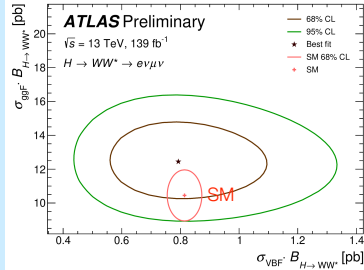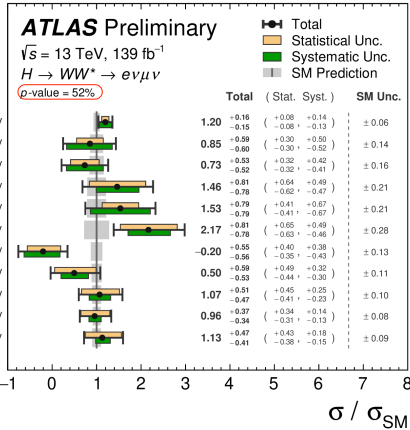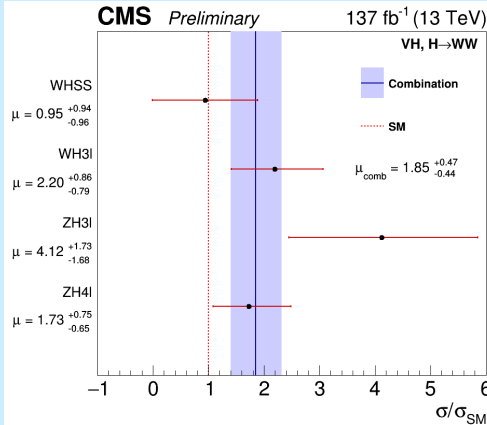
Probing κc [though still at (-15,19)]
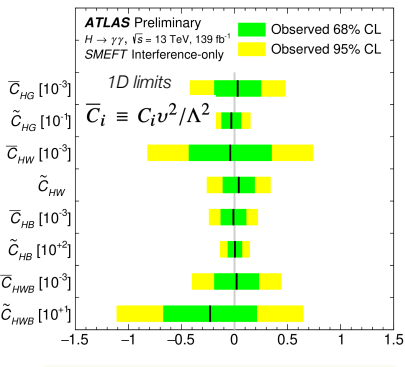
SMEFT interpretation/limits

H→WW & some parting thoughts/questions

STXS analysis by ATLAS; includes a >6σ sighting of VBF WW

CMS: dedicated VH analysis

- Much progress;
- More uniformity welcome; e.g. would be great to have direct comparison of ratios wrt SM
- Remaining work from Run II: clear path, clear plan to legacy results.

- What to do *during* the upcoming 3-4 years of Run III (while data is accumulating): hm…
- LHC publication strategy/plan for these modes in Run III?