70 years of Howie

The last $\sim$ 23 Years:

Two papers and many^2 workshops

What you really want to see: photos

$\rightarrow$ I found $\sim$ 150 photos

$\rightarrow$ will show only a fraction ;-)

. . . surprizingly few photos in which Howie is working . . .

Let's start with the papers:

Inspire search: `a haber and heinemeyer` → 23 results

The first and the last:

Reconciling the Two-Loop Diagrammatic and Effective Field Theory Computations of the Mass of the Lightest $\mathcal{CP}$-even Higgs Boson in the MSSM

M. Carena [§,†], H.E. Haber [♯], S. Heinemeyer [‡],

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Abstract

The mass of the lightest $\mathcal{CP}$-even Higgs boson of the minimal supersymmetric extension of the Standard Model (MSSM) has previously been computed including $\mathcal{O}(\alpha\alpha_s)$ two-loop contributions by an on-shell diagrammatic method, while approximate analytic results have also been obtained via renormalization-group-improved effective potential and effective field theory techniques. Initial comparisons of the corresponding two-loop results revealed an apparent discrepancy between terms that depend logarithmically on the supersymmetry-breaking scale, and different dependences of the non-logarithmic terms on the squark mixing parameter, X_t. In this paper, we determine the origin of these differences as a consequence of different renormalization schemes in which both

Higgs-mass predictions in the MSSM and beyond

P. Slavich[a] and S. Heinemeyer[b,c,d] (eds.),

E. Bagnaschi[e], H. Bahl[f], M. Goodsell[a], H.E. Haber[g], T. Hahn[h], R. Harlander[i],
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A. Voigt[p], C.E.M. Wagner[q,r,s] and G. Weiglein[f],

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T.N. Dao[w], G. Degrassi[x], F. Domingo[y], P. Drechsel[f‡], U. Ellwanger[z], M. Gabelmann[m],
R. Gröber[aa], J. Klappert[i], T. Kwasnitza[o], D. Meuser[f], L. Mihaila[bb‡], N. Murphy[cc‡],
K. Nickel[y‡], W. Porod[dd], E.A. Reyes Rojas[ee], I. Sobolev[f] and F. Staub[m‡]

Predictions for the Higgs masses are a distinctive feature of supersymmetric extensions of the Standard Model, where they play a crucial role in constraining the parameter space. The discovery of a Higgs boson and the remarkably precise measurement of its mass at the LHC have spurred new efforts aimed at improving the accuracy of the theoretical predictions for the Higgs masses in supersymmetric models. The *"Precision SUSY Higgs Mass Calculation Initiative"* (KUTS) was launched in 2014 to provide a forum for discussions between the different groups involved in these efforts. This report aims to present a comprehensive overview of the current status of Higgs-mass calculations in supersymmetric models, to document the many advances that were achieved in recent years and were discussed during the KUTS meetings, and to outline the prospects for future improvements in these calculations.

They have more in common than one may think ...

First the first paper: _(the second paper comes in the end)_

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$\Rightarrow$ note the arXiv number!
$\Rightarrow$ the second paper in the new millenium _(modulo 2000 vs. 2001)_

Now for the workshops :-)

The oldest I could find: LCWS '05 (San Francisco)

Howie is a frequent participant in the "Higgs Days at Santander"

Q: What is Howies HDays number?

Howie is a frequent participant in the "Higgs Days at Santander"

Q: What is Howies HDays number?

A: 7 (among the top ~10 :-)

$\Rightarrow$ a few impression . . .
   . . . with different people and different moods

HDays10: only the group photo

HDays12 at the workshop dinner:

Not sure what he is telling about Carlos . . .

HDays13: at the lighthouse

HDays13: working at the workshop dinner

HDays14: in the 1-star restaurant

HDays16: reception at the roof top

HDays16: the summer with the tooth problem ;-)

HDays17: tooth is in best shape again :-)

HDays19: again at the workshop dinner

⇒ Is he ever working?

HDays19: finally working!

...on cartoons?!

HDays20: even during the pandemic!

But there were many other workshops!

- Higgs Hunting (Paris)

- HPNP (Toyama, Osaka)

- SUSY (everywhere)

- Multi-Higgs (Lisbon)

- Multi-Higgs (Taiwan)

- LC workshops (everywhere)

- Snowmass (Seattle ;-)

- . . .

$\Rightarrow$ a few more impressions

HiggsHunting '18: high above Paris

HPNP '15: the best after-dinner speach ever
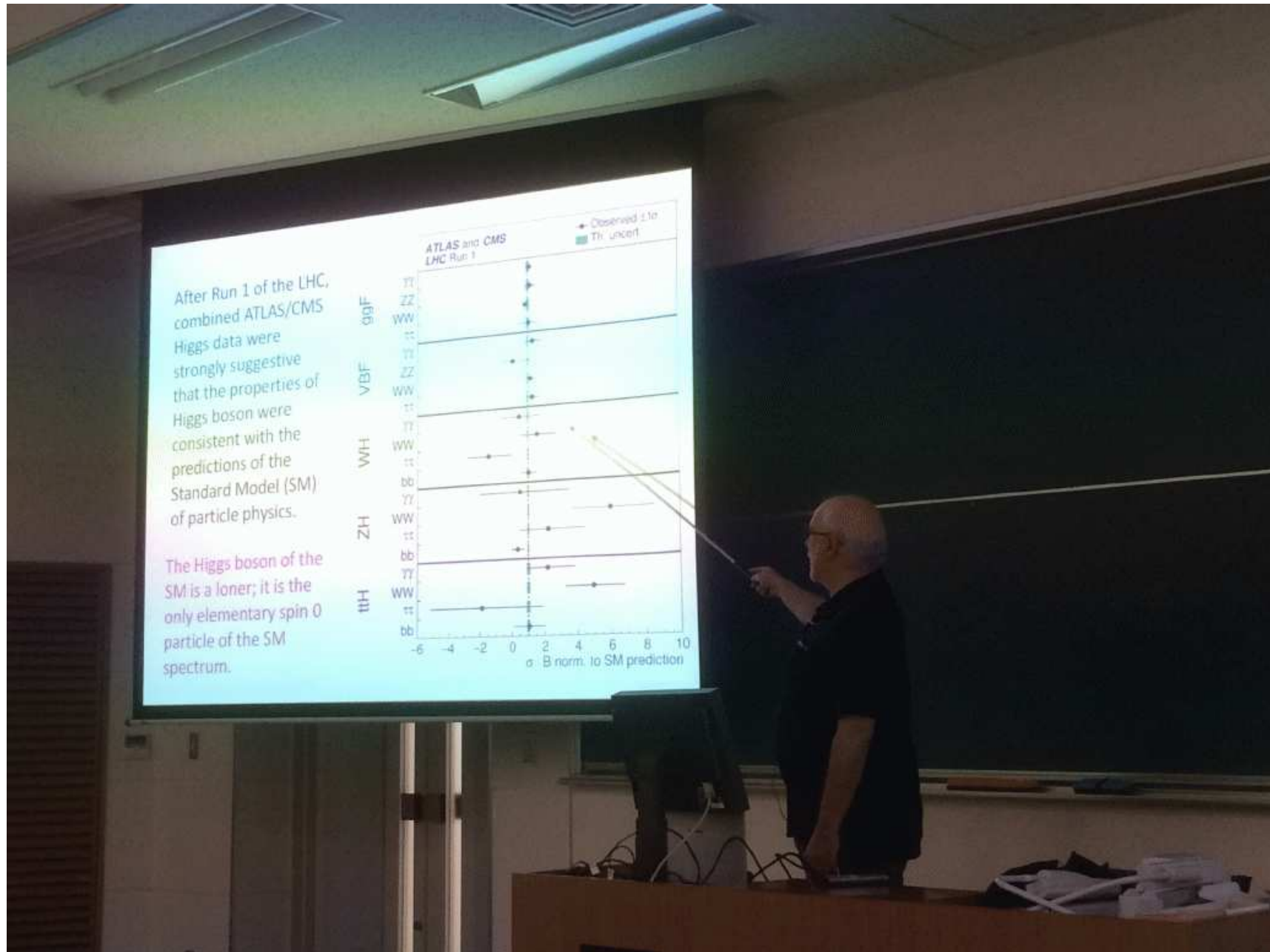
HPNP '17: and back to the workshop dinner ;-)

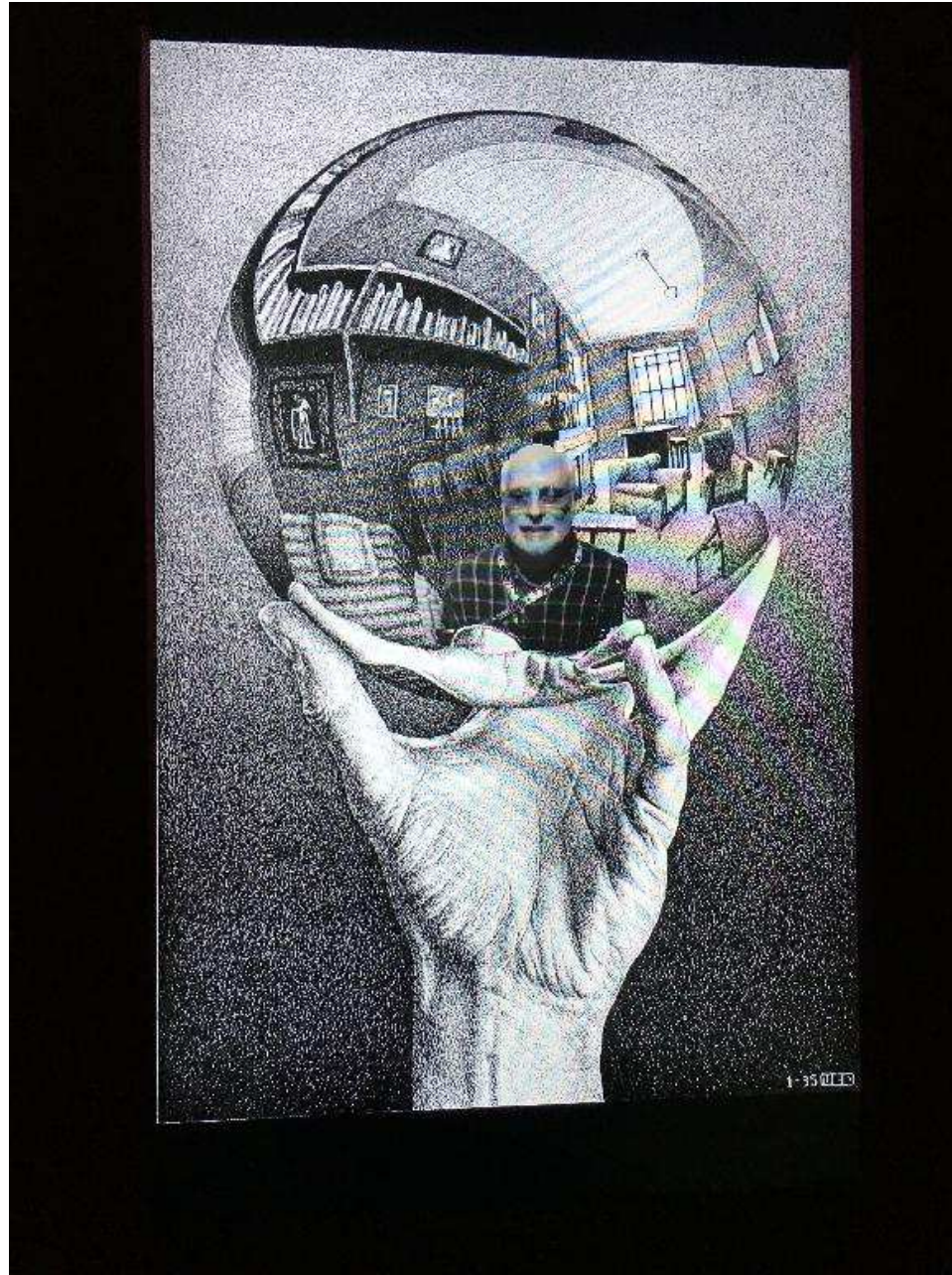# HPNP '19: and with a nice participant!

Snowmass in Seattle 2013:

Howie showed me how to drive and eat at the same time
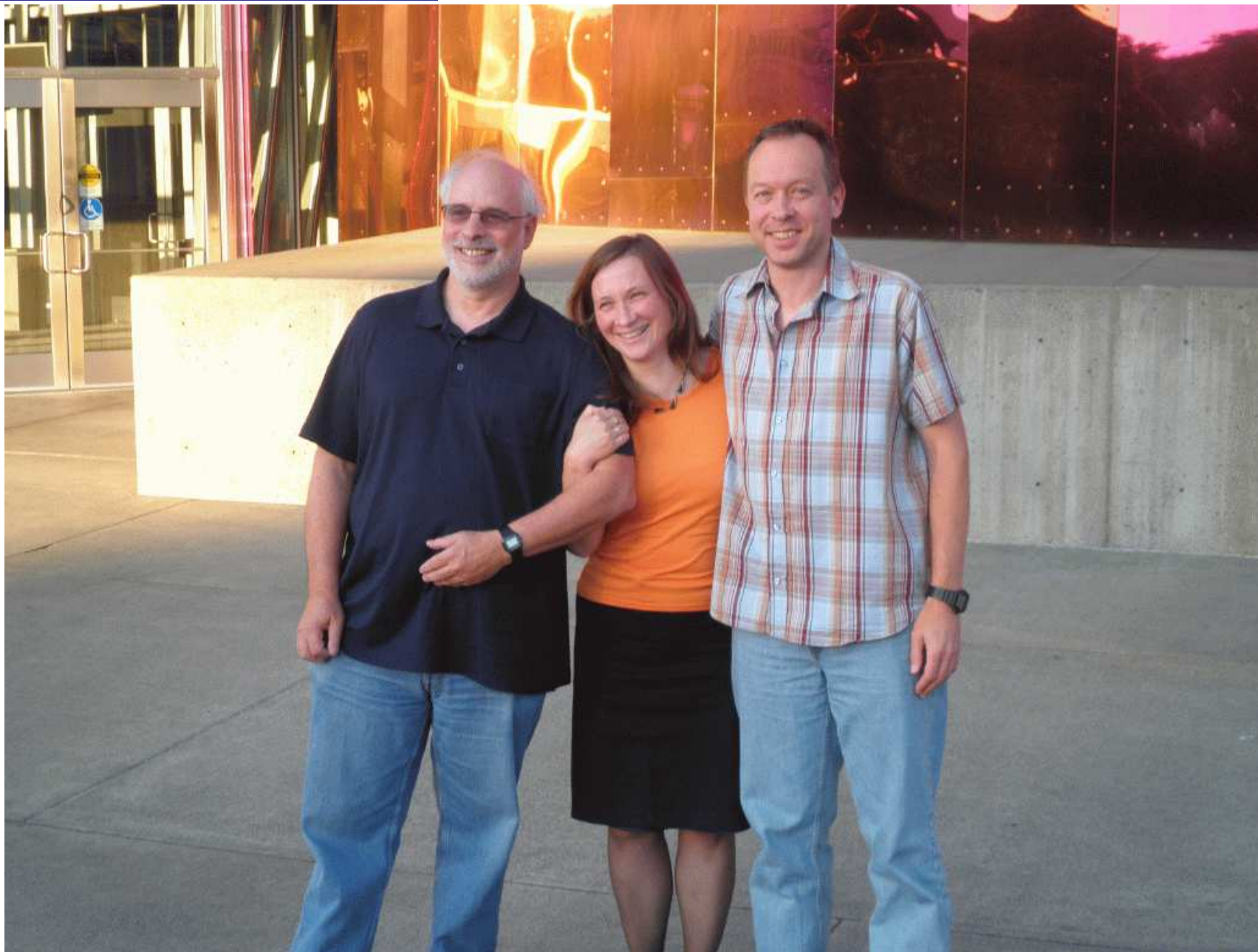
Out of the many SUSY conferences just one: 2015

But it was worth the risk!

Multi-Higgs in Lisbon '18: Howie as M.C. Escher

Multi-Higgs in Lisbon '18: very large Howie

Multi-Higgs in Lisbon '18: very small Howie

And finally: one photo at home :-)
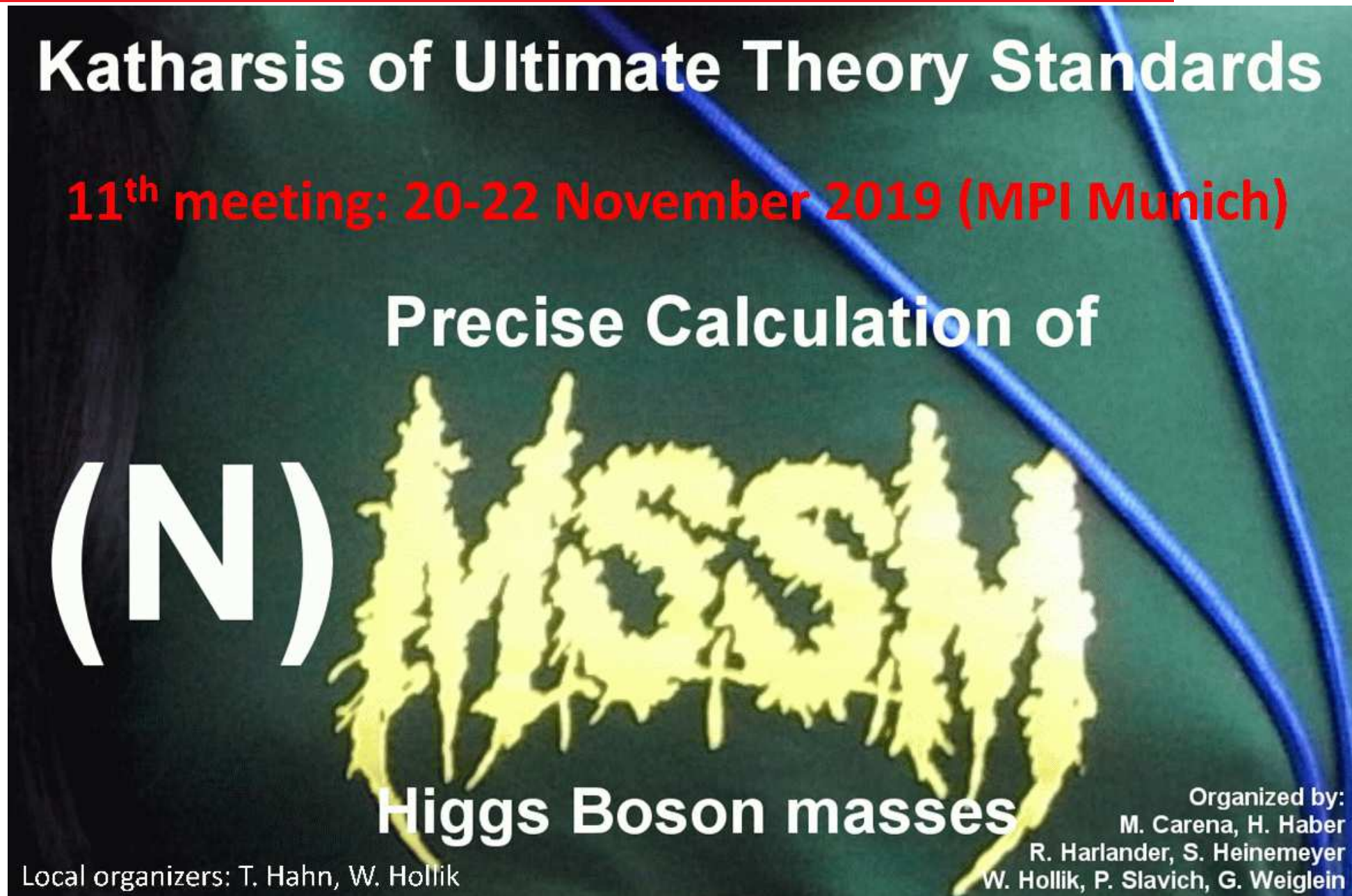
And finally: one photo at home :-)

And very finally: a photo from SUSY'09 . . .

. . . that introduces the second paper

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arXiv:2012.15629v3 [hep-ph] 17 May 2021

In 2020 we got it out juuuuust in time :-)

Happy Birthday, Howie!!

Looking forward to the next meeting in 3D!