

STONY BROOK UNIVERSITY & BROOKHAVEN NATIONAL LABORATORY

HIGGS 2021

Awards and closing remarks

María Cepeda, Michael Duehrssen
for the IOC, in memory of Cen Zhang

In memory of Cen Zhang





Higgs 2021

18-22 Oct 2021, ~~Stony Brook University~~

- Stony Brook and BNL submitted a very nice proposal for Higgs 2020, but COVID-19 made an in-person conference impossible
- We tried again in 2021, and we all wanted Higgs 2021 to be in person or at least have some in-person component.
- Unfortunately it didn't work out :-)
- Fortunately, all was prepared such that a flawless switch to online only was possible!



Higgs 2021

18-22 Oct 2021, ~~Stony Brook University~~

- We just had a fantastic week. Many thanks for the great talks and especially for all the discussions and questions asked!
- Many thanks for your interest and participation. We had a large attendance with 100-200 people connected to the plenaries.
- We understand that connecting during early mornings or later evenings can be a challenge and are grateful for all of you to make the effort and participate!
- A big **THANK YOU** to **ALL** for making Higgs 2021 a success!





Higgs 2021

18-22 Oct 2021, ~~Stony Brook University~~

- Many thanks to all the speakers and their colleagues for the impressive amount of work in preparing and reporting Higgs results
- The talks generated a lot of discussions and the discussion friendly format of the parallel sessions allowed to have time for these discussions.
- Mattermost was a very valuable addition: allowed questions and a direct follow-up on questions that could not be answered during the discussion

* alphabetical order

Best parallel session talks*

- *“Machine Learning the Higgs-top CP Measurement”*
Rahool Barman (Oklahoma State University)

HIGGS 2021
Best Parallel Presentation
AWARD CERTIFICATE

Machine Learning the Higgs-top CP Measurement
Rahool Barman
Oklahoma State University
In collaboration with
Dr. Chaitan Chakraborty (Oklahoma State Univ.), Dr. John King (OSU)
based on arXiv: 2108.07658
Page 20
October 18 - 22, 2021

Projected reach at 14 TeV LHC ($C = 3 \text{ ab}^{-1}$)

• Higgs top CP phase could be probed up to $10 \text{ (} \leq 10 \text{)}^\circ$ at 95% CL
• Sensitivity for top Yukawa in $\mu_0 \text{ (} \leq 0.5 \text{)}^\circ$ at 95% CL

We are happy to certify that a best parallel talk award went to:
“Machine Learning the Higgs-top CP Measurement”
Rahool Barman (Oklahoma State University)

October 18-22
Stony Brook University
Simons Center for Geometry and Physics
<https://indico.cern.ch/event/1030068/contributions/4522423/>



* alphabetical order

Best parallel session talks*

- *“Machine Learning the Higgs-top CP Measurement”*
Rahool Barman (Oklahoma State University)
- *“Search for Higgs Boson Pair Production in the $bb\tau^+\tau^-$ Final State with the ATLAS Detector”*
Christopher Deutsch (University of Bonn)

STONY BROOK UNIVERSITY & BROOKHAVEN NATIONAL LABORATORY

HIGGS 2021

Best Parallel Presentation AWARD CERTIFICATE

ATLAS
SEARCH FOR HIGGS BOSON PAIR PRODUCTION IN THE $bb\tau^+\tau^-$ FINAL STATE WITH THE ATLAS DETECTOR

Christopher Deutsch (on behalf of the ATLAS collaboration)
October 18, 2021

We are happy to certify that a best parallel talk award went to:

“Search for Higgs Boson Pair Production in the $bb\tau^+\tau^-$ Final State with the ATLAS Detector”
Christopher Deutsch (University of Bonn)

October 18-22
Stony Brook University
Simons Center for Geometry and Physics
<https://indico.cern.ch/event/1030068/contributions/4513848/>

* alphabetical order

Best parallel session talks*

- “*Machine Learning the Higgs-top CP Measurement*”
Rahool Barman (Oklahoma State University)
- “*Search for Higgs Boson Pair Production in the $bb\tau^+\tau^-$ Final State with the ATLAS Detector*”
Christopher Deutsch (University of Bonn)
- “*Catching Heavy Vector Triplets with the SMEFT: from one-loop matching to phenomenology*”
Emma Geoffray (Universität Heidelberg)

The image shows a certificate for the Best Parallel Presentation Award. The background features a lighthouse on a rocky cliff overlooking the ocean. A searchlight beam from the lighthouse illuminates a small inset plot of a Higgs boson decay distribution and a certificate document. The certificate text reads: 'Catching Heavy Vector Triplets with the SMEFT: from one-loop matching to phenomenology', awarded to Emma Geoffray at the Institute for Theoretical Physics, Heidelberg University, Higgs 2021. It lists collaborators: Sara Brusa, Sebastian Bruggner, Michel Luchmann, Thomas Plehn (University of Bonn), Wolfgang Rizzo (University of Siegen), Michael Spanner (RWTH Aachen University), Benjamin Stenke (University of Wuppertal). The certificate is dated 11/20/2021 and includes a QR code.

HIGGS 2021
Best Parallel Presentation
AWARD CERTIFICATE

Catching Heavy Vector Triplets with the SMEFT:
from one-loop matching to phenomenology

Emma Geoffray
Institute for Theoretical Physics, Heidelberg University
Higgs 2021

#Higgs2021-01084
Collaborators: Sara Brusa, Sebastian Bruggner, Michel Luchmann, Thomas Plehn (University of Bonn), Wolfgang Rizzo (University of Siegen), Michael Spanner (RWTH Aachen University), Benjamin Stenke (University of Wuppertal)

Event Website: <https://indico.cern.ch/event/1030068/contributions/4530143/>

We are happy to certify that a best parallel talk award went to:
“Catching Heavy Vector Triplets with the SMEFT: from one-loop matching to phenomenology”
Emma Geoffray (Universität Heidelberg)

October 18-22
Stony Brook University
Simons Center for Geometry and Physics
<https://indico.cern.ch/event/1030068/contributions/4530143/>

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Best parallel session talks*

- *“Machine Learning the Higgs-top CP Measurement”*
Rahool Barman (Oklahoma State University)
- *“Search for Higgs Boson Pair Production in the $bb\tau^+\tau^-$ Final State with the ATLAS Detector”*
Christopher Deutsch (University of Bonn)
- *“Catching Heavy Vector Triplets with the SMEFT: from one-loop matching to phenomenology”*
Emma Geoffray (Universität Heidelberg)
- *“Measurements and Interpretations of STXS and Differential and Fiducial Cross Sections in Higgs Boson Decays to two W Bosons with the ATLAS Detector”*
Robin Hayes (University of British Columbia)

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HIGGS 2021

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We are happy to certify that a best parallel talk award went to:

“Measurements and Interpretations of STXS and Differential and Fiducial Cross Sections in Higgs Boson Decays to two W Bosons with the ATLAS Detector”

Robin Hayes (University of British Columbia)

October 18-22
Stony Brook University
Simons Center for Geometry and Physics
<https://indico.cern.ch/event/1030068/contributions/4513089/>



* alphabetical order

Best parallel session talks*

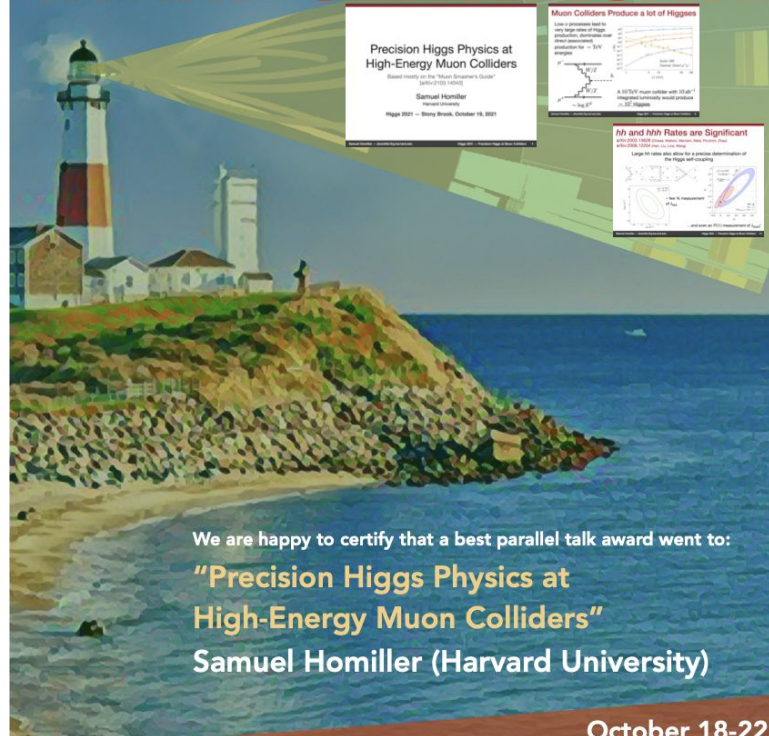
- *“Machine Learning the Higgs-top CP Measurement”*
Rahool Barman (Oklahoma State University)
- *“Search for Higgs Boson Pair Production in the $bb\tau^+\tau^-$ Final State with the ATLAS Detector”*
Christopher Deutsch (University of Bonn)
- *“Catching Heavy Vector Triplets with the SMEFT: from one-loop matching to phenomenology”*
Emma Geoffray (Universität Heidelberg)
- *“Measurements and Interpretations of STXS and Differential and Fiducial Cross Sections in Higgs Boson Decays to two W Bosons with the ATLAS Detector”*
Robin Hayes (University of British Columbia)
- *“Precision Higgs Physics at High-Energy Muon Colliders”*
Samuel Homiller (Harvard University)

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We are happy to certify that a best parallel talk award went to:

“Precision Higgs Physics at High-Energy Muon Colliders”

Samuel Homiller (Harvard University)

October 18-22

Stony Brook University

Simons Center for Geometry and Physics

<https://indico.cern.ch/event/1030068/contributions/4513652/>



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Best parallel session talks*

- *“Machine Learning the Higgs-top CP Measurement”*
Rahool Barman (Oklahoma State University)
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- *“Catching Heavy Vector Triplets with the SMEFT: from one-loop matching to phenomenology”*
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Robin Hayes (University of British Columbia)
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Samuel Homiller (Harvard University)
- *“Searches for resonant and non-resonant HH/YH production in final states with tau leptons and W bosons at CMS”*
Jona Motta (LLR, École Polytechnique)

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HIGGS 2021

Best Parallel Presentation

AWARD CERTIFICATE

Searches for resonant and non-resonant HH/YH production in final states with tau leptons and W bosons at CMS

Jona Motta, LLR, École Polytechnique
in honor of the CMS Collaboration

Resonant boosted X → HH → bbWW

Resonant H → hh → bbtt

We are happy to certify that a best parallel talk award went to:

“Searches for resonant and non-resonant HH/YH production in final states with tau leptons and W bosons at CMS”

Jona Motta (LLR, École Polytechnique)

October 18-22
Stony Brook University
Simons Center for Geometry and Physics
<https://indico.cern.ch/event/1030068/contributions/4514226/>

* alphabetical order

Best parallel session talks*

- *“Machine Learning the Higgs-top CP Measurement”*
Rahool Barman (Oklahoma State University)
- *“Search for Higgs Boson Pair Production in the $bb\tau^+\tau^-$ Final State with the ATLAS Detector”*
Christopher Deutsch (University of Bonn)
- *“Catching Heavy Vector Triplets with the SMEFT: from one-loop matching to phenomenology”*
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Robin Hayes (University of British Columbia)
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- *“Searches for resonant and non-resonant HH/YH production in final states with tau leptons and W bosons at CMS”*
Jona Motta (LLR, École Polytechnique)
- *“Off-shell Higgs Couplings in $H^* \rightarrow ZZ \rightarrow \ell\ell\nu\nu$ ”*
Han Qin (University of Pittsburgh)

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HIGGS 2021

Best Parallel Presentation

AWARD CERTIFICATE



Off-shell Higgs Couplings in $H^* \rightarrow ZZ \rightarrow \ell\ell\nu\nu$
Han Qin
University of Pittsburgh
Higgs 2021
Oct 20, 2021

We are happy to certify that a best parallel talk award went to:

“Off-shell Higgs Couplings in $H^* \rightarrow ZZ \rightarrow \ell\ell\nu\nu$ ”
Han Qin (University of Pittsburgh)

October 18-22
Stony Brook University
Simons Center for Geometry and Physics
<https://indico.cern.ch/event/1030068/contributions/4513066/>





Higgs 2021

18-22 Oct 2021, ~~Stony Brook University~~

- The great topics and talks selected for the plenary and parallel sessions gave a great overview, but also many details, of the current and future Higgs program in the HEP community
- Many thanks to the **program committee** and the parallel session conveners for such an excellent program

- PC chair:
Karsten Köneke



- PC members:
Viviana Cavaliere (BNL), Karsten Köneke (Freiburg), Patrick Meade (YITP), Christopher Palmer (Princeton), Stefano Pozzorini (Zürich), Roberto Salerno (LLR)



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- Many thanks to the program committee and the **parallel session conveners** for such an excellent program
- Parallel session conveners:
 - Precision & Properties: Alexander Huss, Hongtao Yang, David Sperka
 - Yukawa: Patrick Meade, Nicolas Morange, Stephane Cooperstein
 - HH: Daniel Egana, Liza Brost, Agni Bethani
 - EFT: Tim Cohen, Nicolas Berger, Andrei Gritsan
 - BSM: Zhen Liu, Verena Outschoorn, Luca Cadamuro
 - Snowmass/Future colliders: Sally Dawson, Caterina Vernieri, Isobel Ojalvo



Higgs 2021

18-22 Oct 2021, ~~Stony Brook University~~

- Higgs 2021 would not have worked without a fantastic local organizing committee
- Many thanks to the LOC:
Haider Abidi (BNL), Luis Álvarez Gaumé (SCGP/YITP), Elizabeth Brost (BNL), Quentin Buat (SBU/UW), Viviana Cavaliere (BNL), Gloria Clivilles-Ramos (SBU admin), Sally Dawson (BNL/YITP), Paul Grannis (SBU), Tracy Hillenbrand (SBU admin), John Hobbs (SBU), Ilaria Luise (SBU), Patrick Meade (SBU/YITP), Giacinto Piacquadio (SBU/Chair), Marc-André Pleier (BNL), Robert Shrock (YITP), George Sterman (YITP), Alessandro Tricoli (BNL), Dmitri Tsybychev (SBU)



Higgs 2021

18-22 Oct 2021, ~~Stony Brook University~~

- Higgs 2021 would not have worked without a fantastic local organizing committee
- Many thanks to the LOC and especially to Giacinto Piacquadio as LOC chair as well as Gloria Clivilles-Ramos and Tracy Hillenbrand who did the administration of organizing and then cancelling again an in-person conference





Higgs 2021

18-22 Oct 2021, ~~Stony Brook University~~

Usually this would be the time for flowers, but since we are online:

Please **unmute** and give applause to the PC, the session chairs and the LOC!





Higgs 2021

18-22 Oct 2021, ~~Stony Brook University~~

- After two years of being online we will hopefully meet in person again for Higgs 2022
- If you have feedback or ideas what could/should be changed or kept for Higgs 2022 and future conferences, please let the Higgs IOC know: higgs-conference-ioc@cern.ch
- Looking forward to seeing you next year in ...
... Pisa!
- Good bye!

