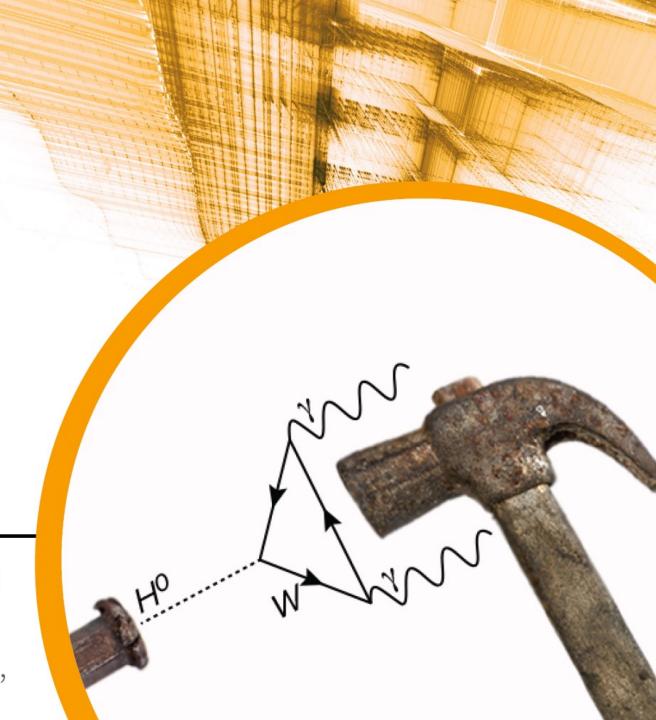
Hammers 8 Nails 2023 Swiss Edition

Frontiers in Machine Learning in Cosmology, Astro & Particle Physics

October 29th - November 3rd 2023

Conference Center Congressi Stefano Franscini (CSF) in Monte Verità, Ascona, Switzerland



The creators



Eilam Gross

Kyle Cranmer





Scientific Organizing Committee

Tobias Golling, University of Geneva

Danilo Rezende, Google Deep Mind

Robert Feldmann, University of Zurich

Slava Voloshynovskiy, University of Geneva

Eilam Gross, Weizmann Institute of Science

Kyle Cranmer, University of Wisconsin-Madison

Ann Lee, Carnegie Mellon University

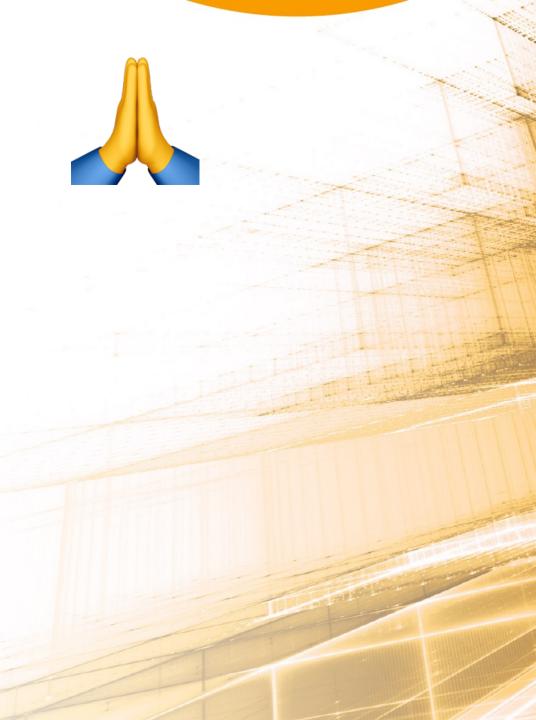
Maurizio Perini, CERN

Shirley Ho, Center for Computational Astrophysics at Flatiron Institute

Tilman Plehn, University of Heidelberg

Elena Gavagnin, Zurich University of Applied Sciences

Peter Battaglia, Google Deep Mind



The sponsors

























The tech team



Matthew Leigh



Debajyoti Sengupta



Sam Klein



The participants





The sad news

Eilam Gross



Michael Elad



Michael Bronstein



Are not here in person (only on Zoom)

Full disclosure

Elena Gavagnin contacted the local police & will meet the Vicecomandante

They will come by from time to time to check the situation and patrol the area (also at night)

More information to follow as needed

The H&Ns spirit

In depth ≥ 1h lectures by experts in the field Plenty of time for discussion

Lightning talks by early-career scientists And infinite coffee!

New experiment this time

Submitted abstracts
Poster session (with beer & pizza) – tonight
Brainstorming session
Industry-academia panel

Balint – all sessions*



*Auditorium – evening talk **tonight**



Brainstorming session

2-min & 2-slide brainstorm spotlight pitches by all early career scientists*

Self-organized brainstorm discussions – seniors to take charge

Brief (optional) summary of discussions

^{*}Send your slides in pdf form to Debajyoti.Sengupta@unige.ch Samuel.Klein@unige.ch Matthew.Leigh@unige.ch the latest by tonight (the slides will be combined to avoid time during transition)

Industry-academia panel

See Suggested topics for panel discussion

& add your questions

& upvote questions 📤

Hummus ⇒ Cheese





WEIZMANN **INSTITUTE** OF SCIENCE





Swiss Edition

Swiss precision!

5-min session delay: 😡

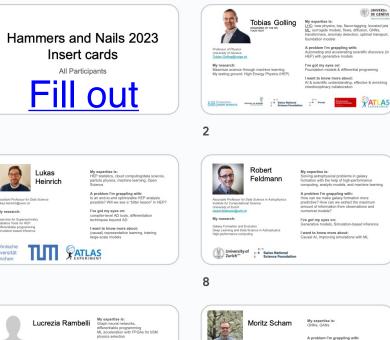
10-min session delay: 😇 🛇 🛇 😂

Speakers: please be considerate & stick to allocated time Ultimate responsibility lies with session chairs

Otherwise: no 🗪, no 🥯

Wear your name tag → meals/diets

Lunch is self-served (access table by table) & dinner is served at the table Minimize food waste: inform hotel reception desk 24 hours in advance in case you do not plan to attend a meal





My expertise is: GNN for Heavy Flavor tag and PF; Higgs Physics, Profile Likelihood, Trial Factors in High Energy Physics

I want to know more about: The use of Machine Learning in various fields,

I've got my eyes on:

Eilam Gross

PATLAS

/k | 開

3

9



My research: Statistical methods for the physical sciences. Uncertainty quantification. Simulator-based inference and ill-posed inverse problems.

I've got my eyes on: Sequential testing. Co-design of experiments and simulation, Causal inference.

I want to know more about: Diffusion models. Graphical neural network What Stats-Al problems physicists are grappling with...







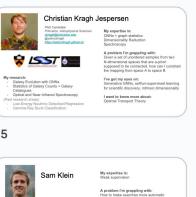


21

A problem I'm grappling with

I want to know more about:

I've got my eyes on:





I've got my eyes on: Self-supervised/semi-e







ATLAS

14











UNIVERSITÉ DE GENÈVE

Università di Genova

My research:
Fast inferenced ML for ATLAS trigger system,
differentiable programming techniques for
including physics information in ML-based
model training, MC to MC calibrations for Higgs

13

ATLAS

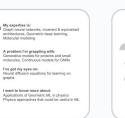
I want to know more about: Possible differentiable programming techniques applications in physics





My research: Weakly supervised searches at the LHC LLMs for HEP









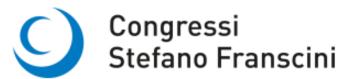
UNIVERSITÉ DE GENÈVE

W

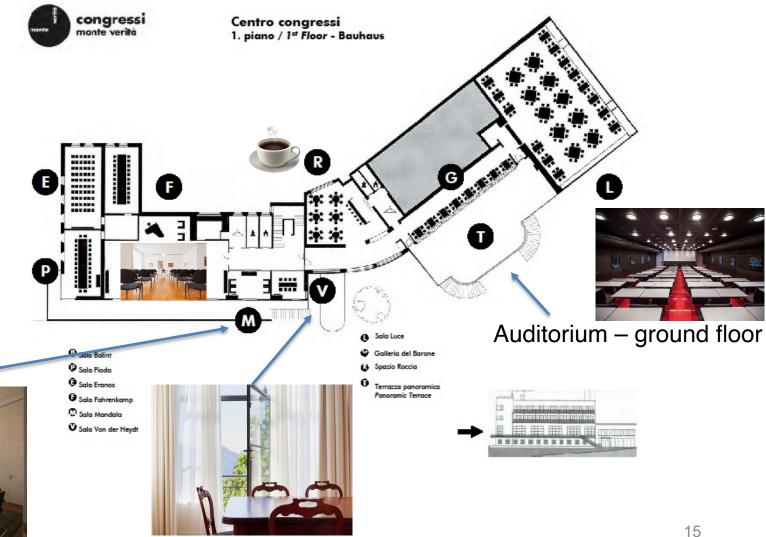
18



The venue

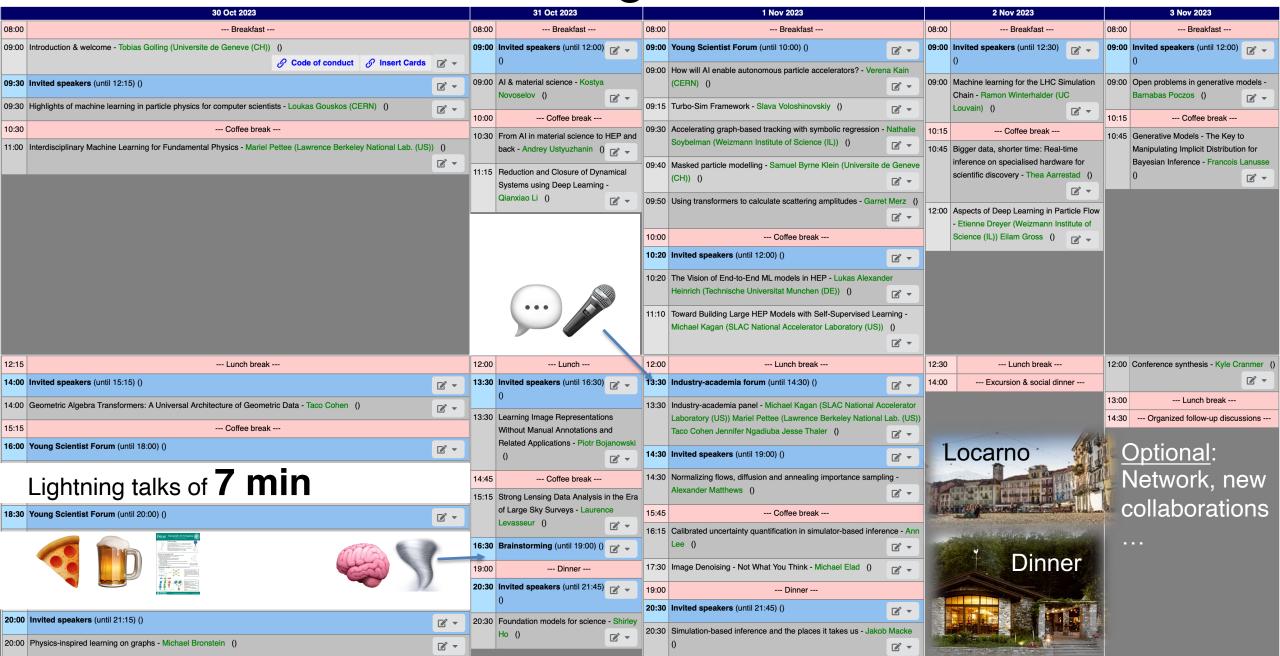


The CSF is the meeting platform of the ETH Zürich on Monte Verità. It is named after the Federal Councillor Stefano Franscini, a native of Ticino, who in 1854, played an important part in establishing the first Federal Institute of Technology in Switzerland, the ETH Zürich.



2 breakout rooms:

At a glance



Code of conduct

Code of conduct

2

We strive to build an inclusive, welcoming environment. Harassment in any form will not be tolerated. We will abide by the IRIS-HEP code of conduct:

The success of "Swiss Edition of Hammers & Nails 2023" depends on its ability to engage a community from collaborating institutions and disciplines with diverse skills, personalities and experiences.

We are outlining here a set of principles and processes to support and promote a healthy community and make "Swiss Edition of Hammers & Nails 2023" a welcoming and productive community.

- · Foster an open, productive, harassment-free environment for everyone.
- Be welcoming and support people of all backgrounds and identities, immigration status, social and economic class, educational level, sex, sexual orientation, gender identity and expression, age, physical appearance, family status, technological choices, academic discipline, political views, religion, mental ability, and physical ability.
- Be considerate. Your work will be used by other people, and you in turn will depend on the work of others. Any
 decision you take will affect users and colleagues, and you should take those consequences into account when
 making decisions. Remember that we're a world-wide community. You may be communicating with someone with a
 different primary language or cultural background.
- Be respectful. Not all of us will agree all the time, but disagreement is no excuse for poor behavior or poor manners.
 We might all experience some frustration now and then, but we cannot allow that frustration to turn into a personal attack. It's important to remember that a community where people feel uncomfortable or threatened is not a productive one.
- Respect the work of others. We recognize the acknowledgment/citation requests of the original authors. As authors, we are explicit about how we want our own work to be cited or acknowledged.
- Be considerate in the words you choose. Be kind to others. Do not insult or put down other community members.
 Harassment and other exclusionary behavior are not acceptable.
- When we disagree, try to understand why. Disagreements, both social and technical, happen all the time and the
 Hammers & Nails community is no exception. Try to understand where others are coming from, as seeing a question
 from their viewpoint may help find a new path forward. And don't forget that it is human to err: blaming each other
 doesn't get us anywhere, while we can learn from mistakes to find better solutions.
- A simple apology can go a long way. It can often de-escalate a situation, and telling someone that you are sorry is an
 act of empathy that doesn't automatically imply an admission of guilt.

As a member of our community, you are also a steward of these values. Not all problems need to be resolved via formal processes, and often a quick, friendly but clear word on an online forum or in person can help resolve a misunderstanding and de-escalate things.

However, sometimes these informal processes may be inadequate: they fail to work, there is urgency or risk to someone, nobody is intervening publicly and you don't feel comfortable speaking in public, etc. For these or other reasons, structured follow-up may be necessary and here we provide the means for that (see Reporting section below).

This code of conduct applies equally to all community members in all Institute situations online and offline, including conferences, training events, mailing lists, forums, GitHub organizations, chat rooms, social media, social events associated with conferences and events, and one-to-one interactions.

"Swiss Edition of Hammers & Nails 2023" encourages education and training on diversity, inclusivity, reporting, and bystander intervention techniques.

Discussing and/or Reporting Your Concerns

If you believe someone is violating the code of conduct or if you have specific concerns, please report this in a timely manner. Code of conduct violations reduce the value of the community for everyone and we take them seriously.

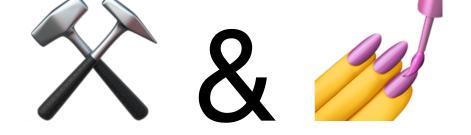
Complaints can be sent to any of the organizers of "Swiss Edition of Hammers & Nails 2023".

[Parts of this Code of Conduct was adapted from the Project JupyterHub's Code of Conduct (Some content on this page is licensed under a Creative Commons Attribution license) and from Princeton Institute for Computational Science & Engineering.]

Discuss Share Ask Speak up Collaborate Push the envelope Inspire

. . .

Enjoy

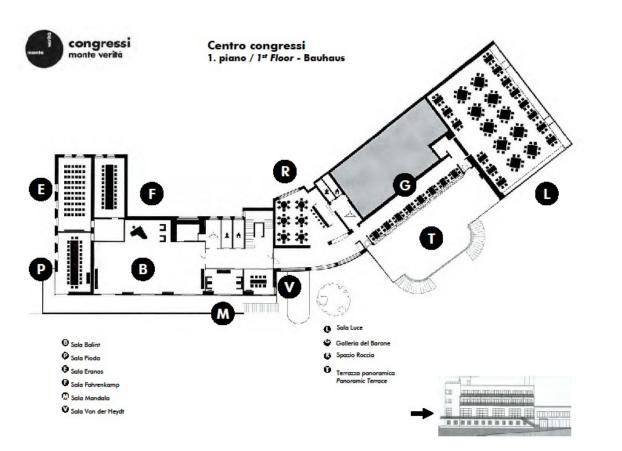


Discuss Share Ask Speak up Collaborate Push the envelope Inspire

. . .

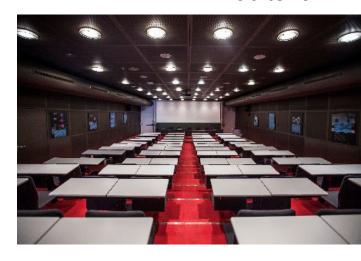
Enjoy

Backup



The localities

Auditorium



Balint



Mandala



Van Der Heydt



