The Standard Waffle

EUROPEAN PHYSICAL SOCIETY HEP2019

Daily EPS-HEP 2019 Newsletter Thursday 18 July 2019

After a whole week of talks, posters, physics discussions, and social events, the 2019 edition of the EPS-HEP conference came to an end. In this last edition of The Standard Waffle you will find highlights from Wednesday's sessions and some final thoughts and goodbye messages from the organizing committee.

Highlights from Wednesday

The morning session covered heavy ion physics, studying the high-T state of the strong interaction, the QGP. Highlights from ALICE included new results on nuclear modification and suppression of heavy D mesons, and determinations of the heavy quark diffusion and scattering transport coefficient in the QGP. A new Upsilon result shows a surprisingly small azimuthal anisotropy, which indicates quarkonia in the QGP to behave differently from single heavy quarks. A new ML technique to subtract uncorrelated background in large cones was also presented.

Next, the emergence of QGP phenomena in small systems such as pp and pPb collisions was discussed, in particular the onset of collective effects and how theoretical modelling allows to learn about the underlying QCD. Among the recent insights are studies in archived ee collision data and in γ+A collisions at the LHC.

The experimental overview focused on high-momentum probes, discussed for example new results on gamma-jet coincidence measurements, which allow to measure both momentum flow outside and fragmentation softening inside the jet cone.

The theory review, finally, discussed recent developments in early thermalisation, the Equation of State as determined from gravitational wave measurements, as well as developments in the understanding of parton fragmentation and energy loss in the QGP.

The afternoon opened with the presentation of the prize for the EPS-HEP poster competition. This year's prizes were awarded to three young colleagues: **Heather Russell** (McGill), for her poster on *The ATLAS Run-2 Trigger Menu*; **Iwona Sputowska** (Polish Academy of Sciences), for her poster titled *Forward-backward correlations and multiplicity fluctuations in Pb-Pb collisions at* $\sqrt{s_{NN}}$ = 2.76 TeV *from ALICE*; and **Martina Vit** (UGent), for a poster on *Search for HNLs in events with three charged leptons with CMS*. The winners gave short, but inspiring talks to present their outstanding work.

The afternoon session continued with presentations on novel data-analysis techniques and R&D for detector and collider technologies. The use of Machine Learning was discussed in analysis, simulation, and in some aspects of collider operation, and the peculiarities of HEP were highlighted.

A wide survey of R&D for collider experiments underlined the ever more severe demands of the high energies and luminosities of colliders. New technologies such as deep sub-micron microelectronics, nano-materials, photonics, and more might be brought to bear on the problems of radiation damage, rates and high resolution tracking requirements.

Focus then turned to the somewhat different requirements of non-collider experiments, such as neutrino experiments, dark matter searches, high energy cosmic rays. Challenges here include very feeble signals in large detector masses, detector performance questions and extremely demanding control of backgrounds. R&D on isotope enrichment, pure materials and underground structures is under way.

R&D for collider technologies took the floor next. Although further extensions of the present technologies such as superconducting magnets

and RF accelerating systems are possible, it will become necessary, for reasons of size and cost, to find new ways to reach ever higher energies. Muon colliders or plasma accelerators may offer such paths, with a number of R&D initiatives exploring them. Investment and smaller-scale demonstrations are necessary steps on the way to realising new kinds of particle colliders.
The session was closed with an inspiring "Highlights" talk by Jon Butterworth (UCL).

Goodbye!

At the end of this intense week of physics, we can safely say that EPS-HEP 2019 was a success! Nearly 750 participants, high-quality plenary talks, 500 parallel talks, 185 posters, many well-attended social events, a successful outreach *Cool Physics Day*, the completion of the two-year long Harbinger Ghent art@CMS project, and the appreciated Origin Poetics 2019 art@CMS exhibition. It was the result of the efforts of many, thus many thanks are in order.

First and foremost, this conference would not be possible without the work of the EPS-HEPP Board. Special thanks go to the outgoing Chair Barbara Erazmus, for the continuing guidance she has ensured during these years.
The pillar of the EPS-HEP 2019 organization was certainly Michael Tytgat, chair of the Local Organizing Committee, in collaboration with the vice-chair Barbara Clerbaux.

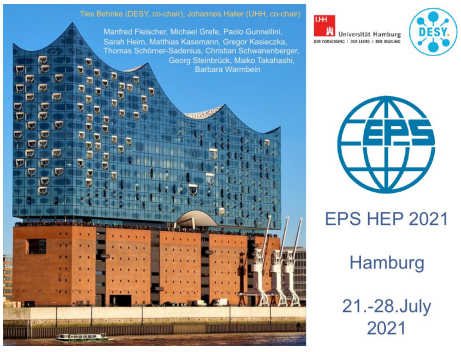
During the past week you have surely had a chance to get to know and appreciate the LOC Secretariat super-team: Marleen Goeman, Sarah Van Mierlo, and Audrey Terrier. Thanks for your incredibly efficient work!

The LOC counts many other people, and each of them contributed in different ways to make the conference so successful. Instead of mentioning their names one by one, here's a group picture at the conference dinner.

Along with the LOC, many students from UGent and other Belgian universities gave an invaluable contribution, from the preparation to the set-up to the technical support during the sessions and the various activities. Many many thanks!
In this long list, a special mention goes to Patou who, with his tireless presence, ensured great quality pictures of all the sessions and main events. *Bedankt!*

Did you know?

The EPS-HEP 2021 conference will be held in the beautiful city of Hamburg.
See you there!



Picture of the day

Also the editorial team of the Standard Waffle would like to say goodbye. We had fun! But we had enough waffles for a while... We hope you enjoyed it as well!

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