

## Daily Newsletter – Wednesday, 29 July

*The finale of a great conference in a wonderful city still has a lot to offer! Here comes the overview.*

### Neutrino Physics

Sterile neutrinos with masses in different energy ranges are physically very interesting objects. Such neutrinos, with masses in the GeV range, could make an important contribution to solving the puzzle of matter-antimatter asymmetry in the universe, while keV-mass sterile neutrinos could constitute dark matter. The quest to find sterile neutrinos in the eV mass range, which might relieve tensions in the findings of short baseline experiments, is close to its end. The absolute neutrino mass scale of the three standard neutrinos is still not known, though the possible range of the heaviest of the three has been narrowed down to the sub-eV range. The main objective of experiments trying to find neutrinoless double beta decay is to discover whether neutrinos have Majorana nature, i.e., if they are their own antiparticles. Unsolved problems related to neutrino oscillations are CP violation and the type of the neutrino mass spectrum, normal vs. inverted. These could be solved by upcoming oscillation experiments.

### Flavour Physics and Fundamental Symmetries

Flavour physics offers the possibility to search indirectly for physics beyond the Standard Model by comparing precise theoretical predictions with experimental measurements. The heavy flavour jamboree will start with a summary of recent theoretical developments, followed by two experimental talks. The first talk will focus on CP-violation and physics

related with the CKM-triangle. We expect to see there the latest result published on Monday in Nature Physics by the LHCb collaboration. The second presentation will summarise the rare decays and exotic states, including information about the recently discovered pentaquark. Low energy precision experiments, like measurements of the lepton magnetic moment or studies using antihydrogen, will be summarised by Gerald Gabrielse.

### Higgs and New Physics

On the last day of the conference, two talks will cover the experimental status of the search for new physics. Supersymmetry is one of the best motivated extensions of the Standard Model and a first talk will provide highlights of the searches for supersymmetric particles performed so far at the LHC. A second talk will give an overview of the territory covered by the LHC Run 1 searches for exotic experimental signatures in a large variety of final states. Both will also cover prospects for the near future. Finally, the impact of these searches on theory with a focus on new theoretical ideas and their signatures will be summarized.

### Poster Prizes

200 posters were on display in the Arcades during the conference. The winner of the Elsevier poster prize will be announced at the beginning of the second session.

### Highlights & Outlook

The conclusion of the conference programme will feature highlights from EPS-HEP 2015 presented by Dieter Zeppenfeld from KIT.

Fabiola Gianotti will take us on an outlook of the physics prospects at high-energy colliders. Fasten your seat belts!

## EPS-HEP 2017 in Venice



After 30 years absence, EPS-HEP 2017 Conference will return to Italy! The beautiful city of Venice is honoured to host this important event and is already working to make it a great success. INFN Padova and the Dept. of Physics and Astronomy of Padova University, will be glad to welcome you in a first-class venue located in one of the most enchanting cities in the world. After rolling out the red carpet for famous actors, during the international Cinema Festival, “Palazzo del Cinema” and the “Casinò” of Venezia Lido will open their doors to this prestigious Physics Conference and are ready to embrace the knowledge that will be revealed in the presentations made by renowned scientists from all Physics Institutes worldwide.



EPS-HEP 2017 at Venezia Lido will be an unforgettable experience not just for the excellence of Science, but also for the unique venue, the food and the warm, friendly and cheerful hosting that the organisers have already started to plan.

Mark the dates now as a must in your 2017 diary. The conference team is eager to welcome everyone in Venezia Lido, from 5 to 12 July!

## “Becoming better all the time”

As the EPS HEP 2015 nears its final day, we talked to Thomas Lohse, Chair of EPS HEPP Board, who shares his thoughts about the conference with us. Excerpts:

### Are conferences like this important and why?



Definitely. It is easy nowadays to do things online and not really interact with people. Conferences like EPS gives people

visibility, especially young physicists, and allow people the opportunity to interact informally. You are not just listening to results but you are also talking to people in-person and this is often how new ideas are exchanged and good things come out of it.

### What was the most difficult task you had to do in the process of organizing the event?

Identifying the EPS HEP 2015 prize winners was very difficult. Often, some EPS prize winners go on to win the Nobel. We want to do the selection well because it matters. We asked for nominations, advice and input from experts in various fields. We formed various sub-committees, read many papers and many reports. Making the decisions took a lot of time, effort, and deliberation, and we are quite happy with the result.

### What aspect of the conference would you like to improve?

Astroparticle physics, particle physics and cosmology are strongly-related fields and it is important that these remain connected. In the current format, the three fields tend to separate into different sessions. What we would like is to find a format that brings them together even more and creates a stronger platform for scientific exchange.

**What are your impressions of the conference this year?**

The format of the conference has been constantly improving. I have been a member of the EPS HEPP board for 10 years now and the conference has evolved, becoming better all the time. We always look for input, particularly on what's not working. This year we had the Outreach & Education session for the first time and it was a great success. The convenors were very dedicated and many people attended it. We would like it to become a regular part of the parallel session.

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