

#EPSHEP2017  
#PhysicsInVenice

## Yesterday in short

New measurements employed heavy quarks as calibrated probes to measure the properties of this primordial state, as shown by ALICE (collective flow of open charm and quarkonia, Ds production) and CMS (Upsilons and fully reconstructed B mesons). Another rich source of information on the QGP comes from its effects on the propagation of high-energy jets, as discussed in new measurements from ATLAS (on the di-jet imbalance) and ALICE (on the jet substructure). Collisions of lead nuclei are an abundant source of production of fresh nuclei and even hypernuclei. ALICE presented one of the most precise measurements to date of the lifetime of the hypertriton. Progress was also shown in the study of collective effects in smaller collision systems. New results on heavy flavours from ALICE suggest they may participate in a common radial expansion of the p-Pb system. New results from ALICE and LHCb shed light on the rapidity dependence of J/psi production at the LHC. After the coffee break: cosmology is living a golden age, with a plethora of new data testing the evolution of the universe, its dynamics and its content. The cosmological standard model is not only able to provide a consistent picture of the initial condition through the inflationary paradigm, but it is also capable to provide a full description of the evolution of the cosmological perturbations, in good agreement with the structures we observe. Yet, we are challenged with many fundamental mysteries, for instance the existence of cosmic acceleration might require new fundamental physics and the nature of DM remains unexplained. After the exquisite data from the Planck collaboration on the CMB anisotropy measurements, which characterise the physics of inflation, the next decade will be dominated by cosmological surveys such as Euclid, LSST and DESI. Future data will be able to either confirm or rule out the current standard model of cosmology and provide information on fundamental observables for the HEP community, such as neutrino masses.

In the afternoon Susy and BSM were discussed and R&D projects concerning detectors and accelerators were presented. The extensive search program at the LHC has constrained the discovery potential for strongly-produced supersymmetric particles. Despite the significant improvement and a rich experimental program, the limits on electroweak super partners are still very low and significant improvements are expected during the lifetime of LHC with the possibility of discovering electroweak physics at electroweak scale. Exotic Higgs decays and long-lived particles decaying into SM particles through Higgs are expected in a number of BSM theories and provide a strong and exciting motivation for a diverse and rich experimental program during High-Luminosity LHC. Over 110 talks and 60 posters reported new ideas for R&D on different detectors to be adapted to all possible experiments, upgrading both sensors and electronics. Among many others 4D detectors are becoming a reality to mitigate pileup at HL-LHC, where radiation hardness is mandatory. A decade is needed for any R&D, while another decade is necessary to build large-scale detectors. Future neutrino and cosmic rays experiments will require new photodetectors. New accelerator machine are studied. Circular ee and pp (FCC and CepC/SpPc) and linear (ILC and CLIC) accelerator are under the examination of the European Strategy, while staging of the projects is foreseen. New technology is explored on magnets, cavities and new technique like plasma accelerations are exploited to plan for the future generation. In the end the time has come to conclude this exiting physics week in Venice Lido. EPS HEP 2017 saw the convergence of numerous new results on all fronts of particle physics, from the Higgs boson, to the elusive neutrinos and the hunt for the dark matter and even the study of the cosmos. The future looks very promising, with upgrades to existing accelerators and experiments as well as several new experiments that are planning to tackle new far-reaching questions.

Thank you to all of you, both organizers and participants! We hope you have been enjoying the physics, the Lido island and the company! See you in 2019 in Ghent, Belgium!

## People

Click on the pictures for videos and more multimedia contents.



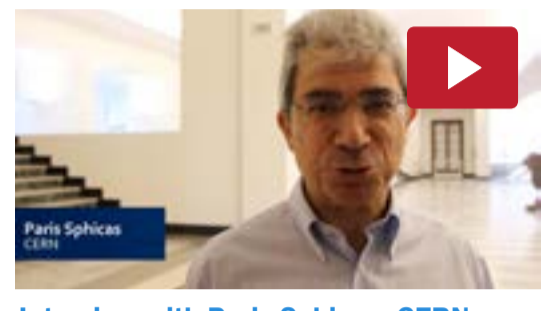
Interview with Rüdiger Voss, EPS President



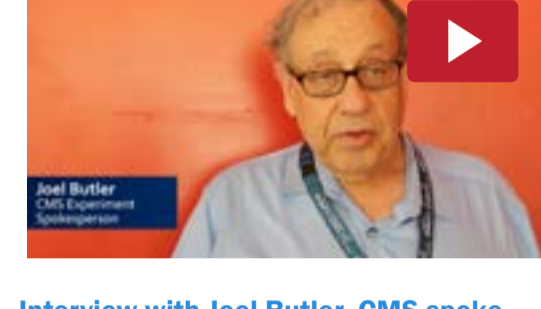
Interview with Fabio Zwirner, INFN



Interview with René Brun, EPS HEP 2017 Special Prize Winner



Interview with Paris Sphicas, CERN



Interview with Joel Butler, CMS spokesperson



Interview with Michael Campbell, CERN and Medipix

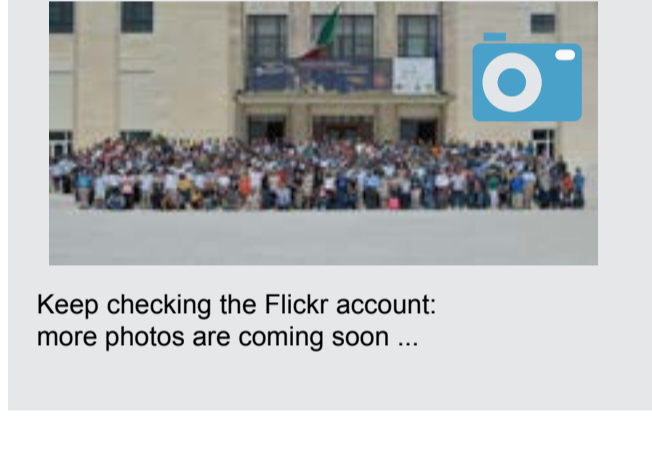


Interview Michael Hoch, EPS HEP 2017 Outreach Prize Winner



Interview with Tsuyoshi Nakaya, T2K Experiment Spokesperson

## Photo Shots



Keep checking the Flickr account: more photos are coming soon ...

## Editorial Board:

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Istituto Nazionale di Fisica Nucleare



## THE BAR AT THE BEGINNING OF THE UNIVERSE

LUCA RALLI



BUILT IN A SPATIOTEMPORAL BUBBLE, BASED FEW MILLISECONDS FROM THE VERY BIRTH OF OUR UNIVERSE, THE **BIG BANG BAR** PROMISE TO PROVIDE GUESTS WHIT A MEMORABLE EXPERIENCE ON THE COSMIC EVENT PAR EXCELLENCE.

THE ONLY ONE, ACTUALLY.

QUITE PARADOXICALLY, EACH NIGHT YOU CAN TAKE PLACE TO THE SHOW ALSO TASTING THE FINEST COCKTAILS OF THE NEWLY BORN UNIVERSE.

COCKTAILS STILL HAVE TO BE INVENTED.



luca ralli '17