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Summary about the Particle, Astroparticle and Nuclear Physics Session

This year, the TASK session received a lot of contributions from the LHC experiments, which presented important new results on pp and heavy ion collisions. The opening plenary talk by Alison Lister of University of Geneva gave an excellent overview of the LHC performance in its first two years of operation and the results obtained at 7 TeV centre-of-mass energy by ATLAS, CMS, LHCb and ALICE. Among the 63 contributed talks, 20 covered subjects ranging from performance of the accelerator and the experiments, through standard model physics all the way to first results on new particle searches. Allowing for a more in depth discussion of the results, these talks and the many posters were an excellent compliment to the plenary talk. All of them showed the spectacular start-up of both the machine and the experiments, and pointed out how close we have come to breaking new grounds in the understanding of high-energy particle physics with these magnificent tools. One can thus indeed answer affirmatively to the question raised by Alison in her plenary talk: “LHC: at the doorstep of new physics?” We are looking forward to crossing that doorstep in the near future.

In addition to this dominant theme, there were no less than 18 contributed talks covering physics from accelerators other than LHC and ten theory contributions. The subjects covered neutrino physics, results from b factories, neutron experiments as well as hadronic resonances. This is evidence for the rich spectrum of physics subjects covered in the framework of the two participating societies; monoculture is not an option. More than ten talks covered hardware issues, including LHC detector upgrade plans and future accelerators, showing that particle physics instrumentation is an equally lively field.

As far as astroparticle physics is concerned, the meeting saw a rich selection of a dozen new results from ground-based and space-borne experiments. It is interesting to observe that several talks covered analysis of the same photon source, Eta Carinae, revealing different aspects of the physics of colliding wind binary systems. Recent results of a direct dark matter search with the XENON100 detector were another highlight of the sessions. Novel instruments, like the FACT camera project for Cerenkov light detection, the balloon cosmic ray experiment PEBS and the gamma ray burst polarimeter POLAR were also presented.

The quality of the talks and posters presented was very high and the attendance to the sessions was very satisfactory. Lively discussions during and after the sessions and around the posters underlined the fact that there are interesting and important new results after the long lead-time for new experiments. The mix between different physics, as well as theory and experimental subjects inside the sessions has once again proven to result in more lively interaction among the participants. Holding a joint meeting between sister societies is also a success story to be followed in the future.

I would like to thank all contributors, especially the PhD students and their advisors and group leaders, for excellent talks and the whole audience for their continued support of the TASK sessions.

Martin Pohl, Université de Genève, SPS-TASK