PPAP Community Meeting, 5th of July 2010, Birmingham

Brief summary of discussion issues that arose from the presentations: topics, views and comments

- **Presentation: Sharon Cosgrove: planning for the next CSR**

Summary: CSR process has already started and will continue till Christmas, clarity on the level of saving required is still to emerge.

Discussion issues:

How will the '25% average' headline cut in Government spending translate to the RCs?

Concern about the overall transparency of the CSR preparation process.

Great concern was expressed about the CERN subscription and its importance for UK particle physics. Any change would require re-negotiation of the existing treaty.

Industrial impact is essential to the current government. Should STFC stress further the importance of education and education of science teachers by universities and research groups?

The political emphasis with the current government is different than before: researchers are not asked to demonstrate impact, there is more interest in industry doing development.

A 30% cut on RC administration is foreseen. 'Administration' is not fully defined yet.

Lobbying of the Science Minister and the 'right buttons' to push were discussed throughout the meeting.

Sending information via letters from University Vice-chancellors could help to pass important messages about the vital role of STFC in 'impact' (students, teachers, relations to industry, training of skilled manpower for industry etc.).

Questions were asked about the role of UK Space Agency (UKSA) and if it will be a detached body from STFC, with consequent reduction of STFC budget. UKSA will be detached; the procedure is under discussion at the moment.

- **Presentation: Jordan Nash: PPAN perspectives and the science roadmap.**

Summary: Significance of the prioritization exercise in view of further cuts. Hoping for economy to recover in few years time. The Roadmaps will be drawn based on 'key questions' and possible facility(ies) classes useful to answer them. PPAN will meet the 20th of July to synthesize roadmaps into a 1 side paper.

Discussion issues:

Science should drive technology not vice-versa.

Concern expressed about keeping diversity in prioritization. What can the community do to prevent ‘killing’ excellent (future) projects.

Necessity to keep alive project possibilities by leaving them on the roadmap

- **Presentation: Mark Lancaster: STFC Grant Review**

Summary: Work in progress to answer RG problems of past 3-4 years, meeting at the end of September will summarise results. The aim of this exercise is to have a system to deliver science which is flexible, robust and responsive to funding fluctuations while respecting differences. Options include: 1) continuation of current RG scheme. 2) 3 years standard grants with staggered bids (like astronomy). 3) core/platform grants for 6 years + bids for additional grants.

Discussion issues:

The RG should protect technicians and also core computer scientists who are essential for the success of current projects.

The wording on any RG new document should be chosen correctly to take these points into account.

Currently STFC platform grants are mainly in astronomy; with a new RG scheme there could be more in PP.

New scheme should be robust to preserve groups’ strengths.

The scheme should allow the acknowledgement of the value of single individuals rather than their working area (example quoted: scientist working on future projects).

FEC is not working, is not clear if anything will be done to change it.

- **Presentation: Roger Bailey: LHC upgrade planning**

Summary: Integrated luminosity of $1fb^{-1}$ expected by the end on 2011 with $L=10^{32}cm^{-2}s^{-1}$, $5x10^{34}$ $cm^{-2}s^{-1}$ by 2020. Discussions on 33 TeV centre of mass energy possibility after 2030. Radiation damage to magnets is not an issue till 2020, triplets will not ready before 2016. Experiments change of inner pixel trackers, etc., will happen in 2016. Definitive plan will be finalised by end 2010.

Discussion issues:

Does CERN have the necessary resources? the answer will come from the task force reports.

The consolidation of SPS to be able to accept higher bunch intensity will happen in 2016.

- **Presentation: Dan Tovey: GPDs-UK Upgrades plans**

Summary: New pixel layer in ATLAS (IBL) and CMS pixel detector by 2016 together with AFP which will be staged starting in 2012. After Chamonix closer interactions between experiments and machine.

Discussion: see final discussion.

- **Presentation: Tim Gershon: Update on Flavour Facilities**

Summary: UK involved in experiments which are all in managed withdrawal (except LHCb). Still making big impact with high-profile results from BaBar, CDF, D0 and NA62. Various upcoming experiments promising interesting physics, LHCb has potential to discover new physics. Its upgrade has synergies with ATLAS and CMS upgrades (see pixels). Super KEKB/Belle2 approved, UK is not currently involved, or in other new flavour experiments.

Discussion: see final discussion.

- **Presentation: Mark Thomson: Neutrino Physics in the UK**

Summary: The measurement of Θ_{13} is the current hot issue but all mixing angles are interesting in their own right as current data consistent with tri-bimaximal mixing. Global neutrino physics programme is strong with several experiments running/coming online. UK involved in long-baseline programme through MINOS and T2K. T2K effort is concentrated on the near detector and beam (world leading in high intensity target design). Cuts affect T2K primarily through PDRA reduction. MINOS effort very low, but sufficient to continue to contribute to data analysis. Limited UK involvement is foreseen in future long baseline experiments. Strong UK effort on MICE and UKNF. Impact of cuts on MICE may introduce significant delays. UKNF activities somewhat reduced but UK still playing leading role. EMMA funded from outside. SuperNemo: UK + France contribute to 70-80% of experiment, UK currently constructing a demonstrator. Conclusion UK still has a neutrino program but no mid-term (mid 2010th) program.

Discussion issues:

Synergies of the neutrino program with ISIS can be found in the solid target development, but even more real synergy is needed between various projects like super beam and neutrino targets.

Liquid argon detectors should be pursued.

- **Presentation: Nigel Glover: Non accelerator experiments**

Summary: Dark matter, electric dipole moment search, WIMP. Several direct detection techniques. Recent results from Edelweiss and Cresst, as well as first science from ZeplinII. All three experiments currently running, with more results expected later this year that should be competitive with the current world's best. EURECA has UK spokesperson and with modest funding could maintain leadership. ZeplinIII will terminate later this year when

current funding runs out. No funding perspectives for new direct dark matter search experiments at SUSEL in the foreseeable future. Cryo-EDM promises high sensitivity. First n-resonance forecast by end of 2010 with new limit on neutron EDM anticipated for 2012 . eEDM at IC has very promising data with expected world-leading sensitivity for summer 2010, and plans to increase sensitivity even further by 2011. Boulby Science Facility has a new manager. UK plays leading role in cryogenic and noble gases dark matter search. Potential possible expansion.

Discussion:

Boulby has grant from EPSRC and it would be interesting to understand what argument was used to get it.

Boulby looks attractive because of stability of its geological site.

Some technologies are being used for Raman spectroscopy.

- **Presentation: Mike Seymour: Theory status and perspectives**

Summary: UK has 175 academics in 20 university physics departments plus IPPP and few maths. departments. UK theory is world leading in several fields (lattice QCD, Strings, etc.) and has a good impact on public perception of science. After a drastic cut in 2008 PPAN agreed additional funds in years 1-3 of the rolling grant. If no further money will be granted after that, the cut to RA positions could be dramatic.

Discussion:

The UK versus European situation.

There is evidence that fewer theoretical physicists have been attracted to the UK since 2005.

There is no evidence that people are leaving, but now it is more difficult to attract good people to fill positions in the UK.

- **Presentation: Claire Shepherd-Themistocleous: Roadmap input to PPAN**

Summary: Report submitted to PPAN in September 2009, plus four questions sent last May for Roadmap.

Discussion:

The PPAP chart describing the PP activities versus time flow should be redrawn to include the latest events (Chamonix, approved dates, overlaps etc.); this will be done asap by PPAP.

Feasibility or desirability of doubling of the LHC centre of mass energy by 2030?

Could UK industries could be interested in participating in the new high intensity magnets construction? At the moment industries with the right expertise are in Japan, EU and USA.

The question of waiting for LHC results before a decision on ILC was raised. It looks unlikely that approval will be granted without a clear physics case.

GENERAL DISCUSSION

STFC science roadmap

PPAN will reduce all five AP roadmap charts into a one page summary.

The use of the roadmap was discussed and there was a common concern that the contents could be misinterpreted, or even send the wrong message. If the global STFC roadmap is being aimed at politicians, it would be important to show what is not funded. This would stress that there is a lot of good science which should in fact be funded, but it isn't.

Possibility of having three road maps: 1) what we would like ideally, 2) what is included at the moment; 3) what would happen if there are more cuts. Already the current roadmap looks too optimistic and in the 1 page PPAN will produce, PP could be reduced to 1 or 2 lines! Putting extra pressure for the PP case would not necessarily work because of the existing competition with other fields.

A proposal was made to connect the sub-fields together, where possible. An example is PP and Astronomy where a clear overlap exists. Advice from the community would be greatly appreciated. The synergies among the fields to answer overlapping question could strengthen the general case for physics.

The UK contribution is perceived to be patchy in the roadmap which is a representation of the current international scenario.

Information flow

The issue of providing information to STFC was raised.

Does Astronomy operate differently, and better, via the Astronomy Forum?

The IOP can be useful to try to get a direct access to the Science Minister.

The RS President can also ask for a direct appointment with the Minister.

Messages could be sent to politicians by individuals, or groups, through personal contacts with MPs.

We should highlight much better our ability to produce trained scientists for the wider benefit of society.

The IOP, the Action Group, or IOP media activity together with Astronomy and Nuclear physics could be used to pass a general message.

The recent RS document contains interesting statistics and could be used to draft letters to politicians. The Action Group will help us with material.

Funding

The community position towards CERN and the GPD upgrades was discussed.

It would be very dangerous for the field if the CERN subscription were threatened.

The best strategy would be to minimise cuts.

Ideally the PP community would manage internally the allocated budget that follows from the CSR.

The necessity to fund small attractive projects was discussed. PP should try to maintain as many of these small projects as possible within budget constraints.