

PPAN
Presentation to IOP town meeting

Jordan Nash

What is PPAN?

- ▶ Particle Physics, Astronomy, Nuclear Physics Science Committee
- ▶ The committee provides advice to Science Board and the executive on all aspects of STFC's particle physics, astronomy, space and planetary science and nuclear physics programmes
- ▶ We meet about 6-8 times a year
- ▶ Our business includes
 - ▶ Recommendations on Statements of Interest, Project Proposals, Strategic Issues, Grants, programmatic review
- ▶ Interact with
 - ▶ Five PPAN Area Advisory Panels
 - ▶ Grants Panels
 - ▶ Science Board



PPAN Membership

- ▶ **Chairs**

- ▶ **Professor Jordan Nash (Chair) – Imperial College**
- ▶ **Professor Sheila Rowan (Deputy Chair) – Glasgow**

- ▶ **Members**

- ▶ **Professor Dave Barnes – Aberystwyth**
- ▶ **Professor Peter Butler – Liverpool**
- ▶ **Professor Yvonne Elsworth – Birmingham**
- ▶ **Professor Alan Heavens – Edinburgh**
- ▶ **Professor George Lafferty – Manchester**
- ▶ **Professor Tom Millar – QUB**
- ▶ **Professor Dan Tovey - Sheffield**
- ▶ **Professor Bob Warwick – Leicester**
- ▶ **Dr. Alfons Weber – RAL/Oxford**



Advisory Panels

- ▶ **5 panels reporting to PPAN**
 - ▶ Particle Physics
 - ▶ Nuclear Physics
 - ▶ Near Universe
 - ▶ Far Universe
 - ▶ Particle Astrophysics
- ▶ **Remit of the Advisory Panels**
 - ▶ Provide Horizon scanning input for long term strategy planning
 - ▶ Provide input on CSR/Programmatic review priorities
 - ▶ Contact point for communication with the community



What has happened in the last year ...

- ▶ At last year's town meeting we had just been through a programmatic review
- ▶ The programme was left looking decidedly narrow
- ▶ Then there was an election
 - ▶ The spending review cast a large uncertain shadow on where we went next
 - ▶ There was undoubtedly a bit of programme blight
- ▶ The outcome of the spending review has allowed us to look at how we move forward and try to address the difficulties left at the end of the last review
- ▶ There has also been a renewed desire in the community to get back to the business of having interesting scientific ideas to pursue



Results of the last prioritization

Alpha 5
Advanced LIGO
ATLAS
ATLAS Upgrades
CMS
CMS Upgrades
GAIA
GridPP
Ground Based Gravitational Waves
Herschel post-launch support
JCMT
JWST – MIRI
KMOS
nEDM
Rosetta post-launch support
Planck post-launch support
VISTA exploitation

- ▶ Alpha 5 projects were supported at a reduced level
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Additional programme

Alpha 4
Aurora ESA subscription & national programme
Cockcroft
Cosmic Vision R&D
Dark Energy Survey
E-ELT R&D
E-ELT subscription
ExoMars
Hinode post-launch support
IPPP
LISA R&D
LISA Pathfinder post launch support
nEDM upgrade
Neutrinoless Double Beta Decay
NUSTAR
LHCB
SKA R&D
Solar Orbiter R&D
SNO+
Stereo post-launch support
SUPERNEMO
SuperWasp operations
SWIFT post-launch support
T2K
Zeplin III

With reductions it was just possible to fund the alpha-4 projects at a reduced level
This still did not balance the budget in all years, but was accepted as a basis for planning



What was left remained unfunded

Alpha 3
AGATA
ALICE
ANITA
AUGER
Cassini post-launch support
CDF
CLIC
Clover
Cluster post-launch support
CTA
D0
eEDM
Einstein Telescope
e-MERLIN
Eureka
ING
Inverse Square Law (ISL)
JPARC Neutrino
LHCB Upgrades
Linear Collider Detector R&D
LOFAR
Low-mass Support Structures for Silicon Detectors.
Lux-Zeplin
NUSTAR additional
MICE
PANDA
Particle Flow Calorimetry
ROSA exploitation
SOHO post-launch support
SPIDER
SPIRAL2
UKNF
Venus Express post-launch support
XMM post-launch support

Alpha 2
ALMA Regional Centre
CCAT
COMET
ELENA
Gemini
JIVE
Liverpool Telescope
LSST
MINOS
MROI
NA62
UKIRT
UKIRT Planet Finder
Alpha 1
BepiColombo
Boulby underground facility
EISCAT
JAI
LHeC
NG1df
SUPER B
Below Alpha
MoonLITE

Without these – many areas of PPAN science are left very narrow

In some cases there has been limited continuing support to avoid pulling out abruptly. Some supported by some additional funding from RCUK



General issues in feedback

- ▶ The prioritization delivered a Science Programme which is very narrow, and in some areas lacks sufficient breadth to allow for future direction.
- ▶ PPAN made it clear in our feedback that we felt additional funds were essential to have sensible breadth in the programme.
 - ▶ This was tensioned against operating the facilities
 - ▶ In the end, the process was robust, there was just not enough funding available to construct a programme with sufficient breadth.
- ▶ The cuts that are being implemented in grants and alpha4/5 were there just to have any breadth at all.




Balance of Programme – after the spending review

- ▶ PPAN met in February to consider what could be done to try to address the lack of breadth in the programme.
- ▶ **General Constraints**
 - ▶ No new money available
 - ▶ Approving anything new means cutting something already existing
 - ▶ There might be some opportunities to take advantages of delays in approved programmes



Astronomy

- ▶ very few projects had been assigned a grade of alpha 3 in the previous exercise so there were limited current items which were just on the cusp of funding. Future funding opportunities included the wish from the astronomy community to contribute to a range of spectroscopic instrument opportunities, the lack of northern hemisphere access and the stated priority of the community to increase grant funding. There were now very few funded projects, which meant that the ability to reduce a number of individual lines to create headroom was much reduced. However, it was recognised that slippages in the E-ELT and SKA planning might result in the availability of some limited short-term funding. An ideal scenario would be to utilise this funding to maintain the core skills that would be required for E-ELT and SKA;
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Particle Physics

- ▶ a number of important projects had been assigned an alpha 3 grading. If additional funding was not available to support these, one option might be for grant panels to award small amounts of staff effort to support activities which would allow some limited increase in the breadth of the particle physics programme. It was noted that grant panels might be unclear whether the strict prioritisation should be adhered to in awarding grant funds. It was felt that grant panels were in the best position to introduce a “bottom up approach” to funding breadth across a research area;



Briefing Note: Virtual Institute for Particle Astrophysics

- ▶ After the prioritization, gravitational waves was the only area of PA left funded
- ▶ Received an outline concept (STFC had encouraged formation of consortia/institutes) for a PA Virtual institute
 - ▶ Concentrating on two areas Dark Matter, VHE gamma ray astronomy
- ▶ PPAN recommended that the way forward should be for the PA community to submit two Statements of Interest (SoI):
 - ▶ UK dark matter community was currently divided primarily between competing Liquid Xenon and semiconductor (cryo-) detector developments. Recommended that the community submit a single proposal for a coherent UK programme to retain skills and expertise for eventual participation in one future dark matter experiment;
 - ▶ a second proposal should be submitted to retain a presence in the European CTA activity as this developed.



Particle Astrophysics

- ▶ PPAN agreed that neither area would be assigned priority over the other prior to submission and that each proposal should focus on maintaining core capabilities
 - ▶ PPAN recommended that any such funding should be provided from the astronomy and particle physics grant lines.



Nuclear Physics

- ▶ only one funded construction project (NuSTAR) remained. If the current position remained, there would be no construction projects within nuclear physics after 2015. This was an urgent concern to be addressed to ensure balance and the future viability of the programme. One potential solution was to invest in developments at ISOL which would come on-stream in 2015. To optimise the benefits of such investment, the nuclear physics community should be consulted in the very short term. It was noted that the current nuclear physics grant round would make decisions in the summer. As it would be three years before the next grant round, it was thus an ideal time to determine the appropriate ratio between exploitation and construction in this area. It was noted that, without investment in instrumentation, it was difficult for UK groups to take leadership in projects.



Proposed changes

- ▶ funding significant investments would require reducing projects with the highest strategic priority and it would require a STFC strategic decision to do this.
- ▶ In order to keep some breadth in the programme, PPAN has proposed that the grant panels could agree funding for small new initiatives following consideration of the relevant science case and tensioning across the area.
 - ▶ Science Board has endorsed this proposal
 - ▶ a small reduction in funding for core activities would be used to target new, smaller projects where a very strong case was made.
 - ▶ important to set realistic expectations since only a very few, excellent projects can be funded



Breadth of programme - summary

- ▶ There is a real need for some additional small activities to keep some options for the future and some vitality in the programme
- ▶ There is no new funding, however
 - ▶ Give some flexibility to the grants panels to award a small number of posts (or fractions of posts) based on scientific excellence
 - ▶ Give some flexibility to grant holders to assign some fractions of posts to new activities (part of the new CG scheme)
- ▶ This is a “grass roots” rather than “top down” scheme to generate new activity
 - ▶ Encourage you all to have good new ideas

