

Dear Colleagues,

We have once again arrived at that point when the AGP has almost concluded its business for the year. Now that the outcomes from the 2018 round have been communicated to the applicants, I wanted to take this opportunity to write to the entire community and provide an update on this round and some wider issues around the AGP review process. Although it is traditional that the AGP Chair shares a report such as this at the end of each round, I wanted to circulate it a little earlier than usual this year given the approaching STFC/RAS Astronomy Forum (23 Nov) and the upcoming deadline for community input to STFC's Astronomy Programme Evaluation via the Astronomy Advisory Panel and Solar System Advisory Panel questionnaires (28 Nov).

Readers familiar with these reports will note that this document is considerably longer than in previous years. The reasons for this are two-fold. Firstly, I wanted to increase the level of transparency regarding the AGP's processes, constraint and outcomes. I also wanted to take the opportunity to address some concerns and misconceptions that have come to light, partly through the community's input to the ongoing Consolidated Grant Review exercise. As such, this report is based heavily on the AGP's end-of-round report to the UKSA Science Programme Advisory Committee and the STFC Science Board. Confidential information (typically relating to specific grant application outcomes) has been removed and an additional section on safeguarding against bias has been added to address some specific community concerns.

I am mindful of the fact among those colleagues who have recently received their application outcomes there is the inevitable and understandable mixture of satisfaction, relief, disappointment and frustration. As always, the AGP's final recommendations are not universally welcomed among applicants, but the harsh reality of the current financial situation is that the process is incredibly competitive and many excellent research projects that are well-received by the reviewers and the panel go unfunded due to the lack of resource available. It should also be noted that the current funding situation has been further aggravated by significant increases in the costs of doing research at many of the institutions seeking AGP support, with the average Indirect and Estates costs rising more than 15% since the last time applicants to the current round were assessed in 2015. Meanwhile, the typical size of an astronomy Consolidated Grant remains small, with the average number of PDRAs supported being just two. One is forced to reflect on whether there is a better process given the small size of the average award and this will be considered by STFC's Consolidated Grant Review exercise. That said, the fundamental issue that is constraining the awards is the size of the AGP budget and not the details of the grant review process. If/when a new grant framework emerges to support astronomy, the overall volume of activity it will be able to fund cannot increase in a flat-cash scenario and the AGP continues to lobby for an increased budget.

As applicants reflect on their outcomes, it is time to remind PIs that they have flexibility to use their awards flexibly. I am all too aware that the scale of the grants awarded often means that this flexibility is very limited, but research council regulations allow PIs to support unfunded applicants and their travel/computing needs, as long as they remain within their budget. PIs are encouraged to liaise with the Swindon office if they wish to explore this further.

I hope that it goes without saying that the grants system would totally collapse without the very considerable effort of the STFC Astronomy team in Swindon, who deserve the wholehearted support of the community. Likewise, the dedication of the AGP panel members, Sub-Panel Chairs and the Deputy Chair, who each take on a significant workload and are regularly required to make unenviable decisions, is outstanding. Finally, we should not overlook the essential work of the community of more than 450 individual reviewers who, in 2018, responded positively to over 90% of the requests to review. I wish to extend my sincere gratitude to all who have contributed.

Best regards,

Prof Jim Wild, AGP Chair, November 2018

Summary of the 2018 round outcome

The 2018 AGP round comprised 210 proposed projects grouped in 38 distinct grant applications and involving 256 individual applicants/co-applicants. Altogether these projects requested 213 FTE of PDRA and technical effort.

At the conclusion of the review process, the AGP recommended support for 77 of the highest-ranked projects, comprising funding for 76 FTE of PDRA/technical effort and various levels of support for 103 co-applicants (totalling 15.4 FTE), costing £9.8M per annum. As a result of the limited budget, the panel are able to recommend support for only 40% of the applicants this round and 37% of the requested PDRA effort. This will leave ten of the Consolidated/Consortium Grant proposals with no PDRA support from this round (and the applicants locked out from reapplying for another three years) and a further six grants with recommended awards of just 1 PDRA. Together these sixteen grants make up 53% of the Consolidated/Consortium proposals in this round.

For those groups where the AGP was able to recommend support, the best outcome is typically flat-funding in terms of PDRA numbers, compared to their existing support. The mean ratio of the recommended number of PDRAs compared to the current baseline at institutes *already* holding an STFC Consolidated/Consortium grant is 0.9 and the median ratio is 1.0. In addition, there are also eight New Applicant proposals of which three are recommended for PDRA support and one is recommended for applicant FTE only. The other four are not recommended for additional support above that already available to them through their existing institutional consolidated grants.

In a departure from the trend observed previously, the size of the AGP applicant community has not increased in this round, with the number of individual applicants almost identical to the same round in the previous cycle, three years ago. Furthermore, the ratio of requested-to-current PDRA and Technical effort (the “overbid”) appears to have dropped to its lowest level in at least 5 years. Whether this is a statistical anomaly, or an early indication that growth within the community is slowing and/or that applicants have more realistic expectations regarding the available level of support, remains to be seen. Nevertheless, in the flat cash environment, 2018 has proven to be another incredibly competitive round with significant pressure on recommended numbers of PDRA, technicians and applicant time.

In line with previous recommended awards, there are no obvious issues with the geographical or science area balance in our recommended awards. Groups achieve similar success rates irrespective of their size, based primarily on scientific excellence and competitiveness. However, as has been noted in previous reports, the median size of the recommended awards this round is small, just 2.0 PDRAs, with 59% of awarded consolidated grants recommended for two or fewer PDRAs and only 22% recommended for more than three PDRAs.

Background to the 2018 round

This was the eighth round of the consolidated grant scheme, corresponding to the second year of the third three-year cycle. As in the previous rounds, 2018 saw submissions from a number of new groups of researchers. These included two groups who had not previously applied for a Consolidated Grant, two new Consortium Grants and eight applications accepted under the New Applicant guidelines. Also, the former partners in one 2015 Consortium Grant proposal chose to submit two separate Consolidated Grant applications in 2018.

As a reminder, the majority of applications to the AGP are for three-year Consolidated Grants (CGs) to support astronomy research within a single research organisation. It is not unusual to receive multiple CG applications from within the same Research Organisation (RO) in any given round, with proposals coming from distinct departments within the RO, or in response to one or other of the two parallel AGP calls announced each year (described below). A Consortium Grant application is essentially a Consolidated Grant but proposed jointly between researchers in more than one RO, with a common research programme. The aim of a Consortium Grant is to provide a concerted and coordinated effort to tackle a particular research area or technology development. Individuals can be applicants on a CG or a Consortium proposal, but not both. Finally, New Applicant (NA) proposal provide a route for eligible researchers based at CG-holding research organisation to apply for AGP support. This route is most commonly used by academics who are appointed between CG review cycles to seek funding to support their research until they join their RO's next CG application.

The funding provided by STFC for exploitation/blue-skies development through AGP has been under sustained pressure since before the start of the consolidated grant scheme. The imposition of "flat-cash", in addition to the lack of indexation, meant that resources were expected to be tighter in this round than they were when this cohort last applied in 2015.

The AGP review process

The AGP review process is run by an extremely dedicated and efficient STFC office team who, as in previous years, provided an exemplary level of support to the panel and the community.

As a result of the 2015 review of the Consolidated Grant scheme, the AGP proposal call was split into two independent grant calls: one covering solar and planetary science (SS/PL) and the other observational and theoretical astronomy (AO/AT). This allowed the applicants to write smaller, less complex and more coherent applications, which should be easier for the panels to assess. Single proposals spanning the two calls are not permitted, however a handful of applicants with research interests in both SS/PL and AO/AT were named on proposals to both calls from some institutions.

Timetable

The AGP review process followed our standard timetable, which has the aim of ensuring STFC can make announcements to the applicants before the end of the key window for advertising PDRA posts in November-December. The significant dates were as follows:

Application deadline	Feb 6
AGP kick off meeting	Feb 19
Reviewer comments sent to applicants	May 8
AO/AT meeting	Sep 4-6
SS/PL meeting	Sep 19-20
Merging meeting	Sep 27
UKSA SPAC meeting	Oct 17
STFC Science Board meeting	Oct 26
Announcements	November

Proposals submitted to the two AGP calls are each assessed by a pair of sub-panels: The Astronomy Observation (AO) and Astronomy Theory (AT) sub-panels handle proposals to the AO/AT call and the Solar Studies (SS) and Planetary Science (PL) sub-panels assess those to the SS/PL call. As usual, by ensuring the applicants discuss with the Office the scope of borderline projects prior to submission, no projects were mis-assigned by the applicants to the wrong call (which would have resulted in these being rejected).

Almost all applications contain more than one project, and each project was assigned to the relevant sub-panel (AO or AT, SS or PL). The appropriate sub-panel chair then selected a panel member (Introducer) for each project. Where a grant contained projects in both sub-panel areas, more than one Introducer was selected, one of whom was chosen as the Lead Introducer with responsibility for overseeing the review of the whole proposal. The Introducer(s) led the selection of reviewers, the setting of Panel questions, the discussion at the panel meeting, and the compilation of feedback.

The review stages were identical to previous rounds:

- (i) Reports by external reviewers (goal is ≥ 3 reports per project and a minimum of 2);
- (ii) An opportunity for applicants to respond to both reviewer reports and specific "Panel Questions";
- (iii) Initial assessment of each project before the meetings using the assessment criteria (below), with multiple project Readers and a project Introducer assessing independently;
- (iv) Round-table discussions of each project at panel meetings, leading to a ranked list and recommendation of resources to be awarded, from each call;
- (v) Merging of the ranked project list from the separate calls by a subset of the AGP;
- (vi) Recommendation of outcomes to Science Board/SPAC and approval to commit;
- (vii) Feedback to applicants and formal announcements.

The applicants' Knowledge Exchange and Outreach plans contained within the *Pathways to Impact* document were assessed in the same manner as the *Data Management* plans, in that they were graded as either *acceptable* or *unacceptable*, with unacceptable documents being returned to the applicants for revision.

Each project was initially assessed against a standard set of evaluation categories, based on those given in the Research Grant Handbook. The categories for this assessment have remained unchanged since the 2015 round and are as follows:

1. Importance of the proposed science
2. International leadership
3. Feasibility of the proposed work
4. Productivity of applicant
5. Environment and management of group
6. Strategic value to STFC/UKSA
7. Productivity of PDRA
8. Urgency of proposed work

A subset of sub-panel members (typically, the Introducer and approximately five Readers selected by the sub-panel chair based on expertise) read each project in advance of the panel meetings and provided pre-meeting assessments. Sub-panel chairs were required to read and assess *all* projects in

their sub-panel. These pre-meeting assessments were visible only to the AGP Deputy Chair, who could use them to highlight disagreements to allow these to be clarified or, if there appeared to be unanimity, to bring the discussion to a speedy conclusion.

Following its introduction in 2017, a *Technical Experts* sub-panel provided expertise on the panel to appropriately tension technical and exploitation/theory projects.

At the panel meetings, an Introducer led a discussion of each project, following which final assessments were agreed around the table, and provisional resource recommendations made. In a very small number of cases, where a significantly reduced allocation was recommended – for example recommending support for applicant time on a project, but not the requested PDRA – the evaluation was revised to reflect the quality of the de-scoped project rather than the original request, thus ensuring consistency of assessment. The final output is a ranked order of projects, which is agreed by discussion by the sub-panels responsible for that call. All the meetings were also open to attendance by programme managers from both STFC and UKSA, in line with the dual-key system.

The pairs of sub-panels for the two separate calls met together: first the AO and AT sub-panels, followed by the SS and PL sub-panels. To ensure consistency, the AGP Chair and Deputy Chair attended all meetings to observe, steer and offer policy advice. A subset of the panel (AGP Chair, Deputy Chair, sub-panel Chairs, and a small number of other panel members) then met to merge the ranked lists from the two call meetings.

Some comments on the key points of the review process:

- i. Due to their frequently diverse scientific content, it is required that applications are divided into distinct projects, usually one per PDRA, but occasionally more complex, and sometimes for applicant time only. Although some applications have cross-cutting resource requests, for example in computing, to a first approximation AGP is evaluating individual projects. Therefore, our ranked list is a rank order of projects, not of applications.
- ii. As in previous rounds, AGP evaluated applicant FTE requests against the explicit work-plans given in the science cases, in an identical manner to the assessment of the case for PDRA support. This frequently results in research-active applicants not being recommended for any support, since their PDRA-projects are not recommended for support and their contributions on other projects have not been justified in the case. This issue is discussed further below.
- iii. There is a sharp threshold in funding: a project just above the PDRA-funding cut-off will typically be recommended for both PDRA support and applicant time, while those just below the threshold get neither. To mitigate this, in the 2014 round the AGP began recommending a small amount of applicant effort to those applicants on projects which fell just below the cut-off line for PDRA support, but where the science was judged to be of high quality and where they would receive no applicant time support on a more highly-ranked project. This resource was recommended to allow development of the science in these internationally-competitive projects, which AGP was unable to recommend for PDRA support. While the AGP continued to consider applicants for support through this practice in 2018, pressure on the budget has meant that AGP is not recommending any of these development awards this round.
- iv. A factor which can indirectly influence the levels of AGP support to an individual applicant is the availability of alternative (non-AGP) funding. AGP does not rule out applicants who have been successful in securing alternative funding, but it is the responsibility of applicants holding related awards to demonstrate clearly that the projects they are proposing to AGP lie well outside the remit of their other grants. Typically, this is most relevant to applicants who also hold research fellowships (e.g. STFC Ernest Rutherford Fellowships, Royal Society

University Research Fellowships) and ERC funding. They often find this difficult to do as they must make the case that the proposed research is of the highest scientific priority (to stand a chance of being supported by AGP) but also why they are not using the flexibility of their existing funding to undertake the work. As a result, some very active researchers are not recommended for PDRA or applicant FTE support through the Consolidated Grant scheme.

Analysis of the 2018 round outcome

Recommended posts compared to baseline

In absolute terms the recommended changes in support to groups already holding STFC consolidated grants are relatively modest: the typical change is ± 1.1 PDRA. However, when seen in the light of an average award to these groups of just 3.2 PDRA, this can correspond to a one-third change in support every three years, which is clearly challenging to manage.

In this round, four institutions saw their level of supported drop by 2 PDRA (in one case falling from two to zero) while others saw a rise of between 1.5 and 2.0 PDRA compared to the previous round. This volatility is less than in the 2017 round, but is still difficult for the applicants to manage. However, since the highly competitive ranking process predominantly focuses entirely on the quality of the science proposed in future projects, large relative changes in the recommended support are possible, both upwards and downwards. The trend between recommended and existing support is illustrated on an individual grant-by-grant basis in Figure 1 and integrated for the round as a whole in Figure 2 (which also shows the support compared to other rounds).

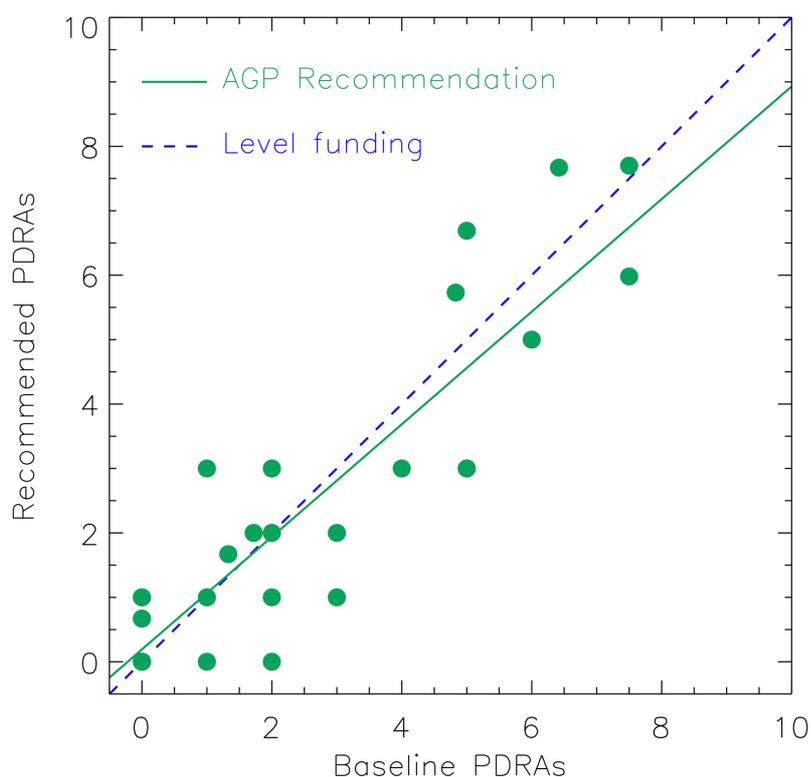


Figure 1. The number of PDRA recommended in each proposal in this round versus existing STFC support to that group ("Baseline"). The dotted line shows level funding and the solid line is a best-fit with a gradient of 0.87 and a correlation coefficient of 0.91.

Applicant FTE

The number of academics requesting support in 2018 was 256, of which 103 (40%) are recommended for support. In 2018, the proportion of applicants receiving applicant FTE was 106/280 or 38%, while in 2015 (the last time the current applicants were considered) it was 165/258 or 64%. AGP followed published guidelines, recommending between 15-25% FTE for a major involvement in a project, and smaller amounts for secondary involvements, but *only* if these were explicitly justified in the science case. There were also two successful “Applicant FTE-only” projects. The net result is that AGP recommended a total of 15.4 FTE of support to academic staff this round, compared to 21.3 FTE for this round three-years previously. Thus, the total level of applicant support recommended has declined.

As previously, in an attempt to address concerns about the number of applicants having no FTE awarded (and to also reduce the all-or-nothing nature of the funding cut-off in our ranked list) AGP considered recommending a small amount of applicant FTE support to the applicants on those highly ranked projects which fell just below the cut-off line for PDRA support. However, given the pressure on the budget it was felt that this practice could not be justified in the current round, with the panel preferring to maximise PDRA/tech support. This is entirely a result of the ever-increasing pressure on the AGP budget.

The mean recommended applicant FTE award per funded applicant has remained unchanged compared to 2017, staying at 15%. This is actually a slight increase since these applicants were last reviewed in 2015 round, when the funded applicants were supported at the 13% level on average. This is partly a consequence of not supporting a group of applicants ranked just below the nominal cut-off at the 5% level, thus driving up the fraction of FTE supported for applicants whose projects are successful (while funding a smaller overall fraction of the pool of applicants).

As always, AGP cannot support many excellent scientists because of the need to assess cases based on the projects as presented (rather than the wider contribution of these individuals to their research fields) and the very strong competition for resource. It is therefore stressed, as previously, that AGP’s recommendation to award or not award applicant time to an individual is not an indication of whether that individual is “research active” or not.

New Applicant proposals

The New Applicant scheme continues to be popular: this round there were eight applicants, from six separate departments, each proposing one project. Three were recommended for support including a PDRA and applicant time and one was recommended for applicant FTE only. The success of these proposals (50%) is another indicator of the quality of the new additions attracted to the world-leading UK astronomy community, but also contributes to the increasing pressure on the inadequate funding in this area. It is worth stressing that, even when unsuccessful, these new applicants can have their basic research support provided from the existing consolidated grants at their institutions, until these are next resubmitted (this flexibility is allowed by the rules for consolidated grants).

The wider funding context.

Historical evolution of grant funding

Figure 2 illustrates the evolution of grant volume and community size. Between 1995 and 2006, posts awarded tracked community size. This was achievable because the overall science budget doubled after 1997. After 2006, community growth continued but the number of PDRA posts dropped dramatically.

Over the past 8 rounds, grant funding has roughly stabilised, but at a historically low level. This is reflected in Figure 2, with the numbers of PDRA’s involved in science exploitation increasing from a low point in 2010, but still below the historic baseline and well below the level of support in the mid-

2000s. Figure 2 suggests a level of ~85 PDRA posts for this baseline, compared to 79 posts recommended in the current round, with the level of support which AGP can offer having plateaued. Note that this figure presents PDRA posts (i.e. the number of individual posts rather than the FTE), with the 79 posts recommended equating to 73.4 FTE of PDRA effort. Meanwhile the size of the academic research community has grown over the last decade by ~5-8% per annum. This means that the ratio of PDRA to staff has remained constant at a very low level (less than one PDRA per three full-time academics) since the cuts imposed in 2010. Moreover, in the face of a flat-cash budget the recovery in PDRA numbers in recent years has come in part at the cost of *significant* pressure on applicant FTE.

It is interesting to note that size of the community of applicants, as measured by the 3-year running total of applicants to the AGP shown in blue in Figure 2, has dipped slightly for the first time. This is due to a 1% decline in the number of applicants to AGP compared to the same round in the previous 3-year cycle. Whether this is because of a change in the size and demographic of the UK astronomy community, or is a symptom of potential applicants choosing not to apply, is not clear at this time. However, as noted earlier, this reduction in the number of applicants has been accompanied by a drop in the overbid ratio of requested/current resources. It is possible that the UK astronomy community is responding to the strong guidance (offered consistently for several years) that in the current financial landscape, it is unrealistic to overload grant applications with projects that stand little chance of being funded. With this in mind, perhaps Research Organisations are trimming the lower-quality tail from their applications prior to submission, with an impact on both the number of applicants and the resources requested. The AGP will continue to try and manage expectations and monitor this issue in future rounds.

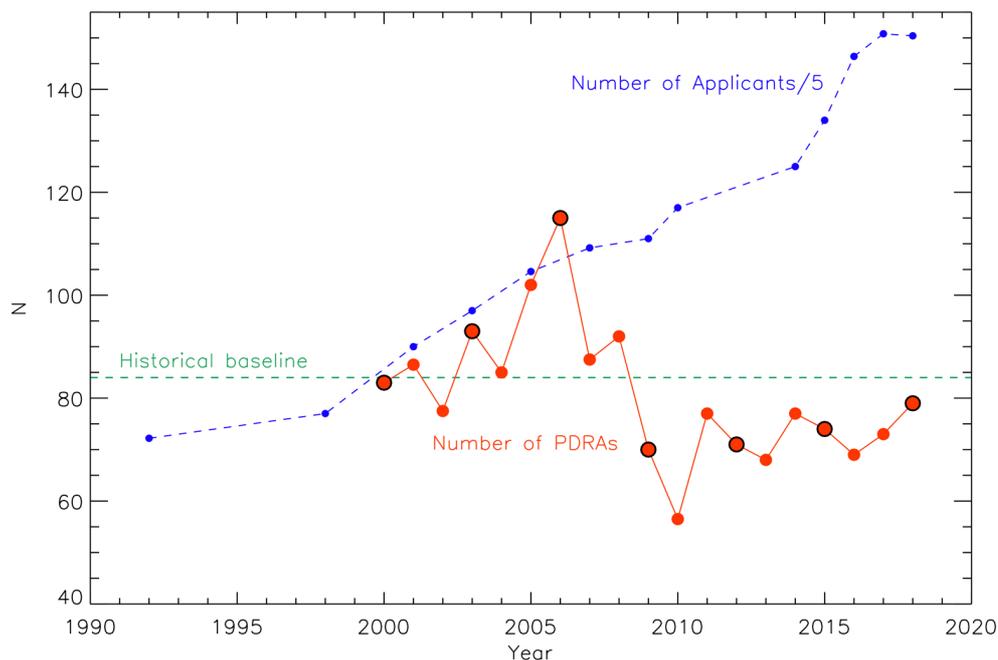


Figure 2: The evolution of PDRA support provided by STFC/PPARC astronomy grants compared to the growth of the UK's academic research community. The PDRA numbers represent the number of posts awarded in each round (so the average number of PDRA's in place is roughly three times as large) and do not include Technician posts. The number of potential applicants is based on returns made to the STFC Education and Training committee until 2010 and then derived from the total number of grant applicants in the consolidated grant rounds since 2013. Note that the Applicants line has been divided by 5, so that it can be compared with the PDRA awards, and roughly a third of applicants will apply in a given round. The previous submission years for the current round are identified by black circles.

Overall, the conclusion to be drawn from Figure 2 remains unchanged from the recent rounds: an academic working on astronomy research has access on average to a third of an STFC-funded PDRA at any one time, or equally that they can expect to be awarded three-years of PDRA support *once every decade*.

It is worth keeping in mind that the world-class UK astronomy community benefits from significant ERC support. The online database of ERC-funded projects indicates that there are 49 current ERC awards held by UK researchers in the AGP area, with a total value of around €98M. This high success rate reflects both the quality of the UK's astronomy research community, and also their ability to leverage previous support from STFC into significant research investment. Over 2019-2021, the 11 ERC awards held at institutes in this round are expected to contribute ~€9.96M (~£8.77M) of research support, equivalent to about one-third of the AGP budget. This contribution has offset some of the drop in STFC support shown in Fig. 2. If this ERC funding stream were to be removed – a very real risk due to Brexit – there would be a very significant threat to the community's ability to fully exploit the STFC and UKSA's investment in facilities.

Applicant v PDRA effort

As in the past three rounds, the levels of applicant time AGP is able to recommend remain disappointingly low due to the limited budget. The mean level of recommended applicant time per PDRA is 21% FTE, and the mean amount per funded applicant is 15% FTE. In cash terms the ~15.4 FTE of recommended applicant time will cost roughly £2M per annum. For most academic staff, these modest awards are their sole FEC support from a UKRI body. This is compounded by the fact that a large fraction of research active staff (153 from 256 in the current round, or 60%) have not succeeded in obtaining support at all and are locked out of applying for exploitation/blue-skies development funding from STFC for three years. As has been noted in previous rounds, this outcome is bad in several ways, but there are two especially serious problems.

Firstly, some universities are using FEC recovery as an indicator of whether someone is “research active”, which has serious implications for career development and promotion. From the AGP's point of view, this assumption is very misguided. Many internationally-competitive researchers are simply failing to obtain resource due to the very limited funds available.

Secondly, FEC support is failing in its intended aim of replacing the old dual-funding system. If AGP had funded 15% FTE for all applicants judged research-active (90% of the total or 230 individuals), regardless of whether they proposed a successful PDRA-project, that would cost around £5M per annum (just over half of the entire AGP budget for this round) and would reduce the PDRA/Tech effort that AGP could support from 77 to around 50 FTE. Awarding an average of 20% to the majority of applicants would reduce the PDRA numbers by over 60%, to ~30 PDRA's a round, and would mean an average academic would have access to around 10% of a PDRA on average (or equally would have less than a 1-in-10 chance of obtaining PDRA support in each three-year cycle, equivalent to being awarded a total of three years of PDRA support in their entire academic career).

The highly-constrained funding parameter space in which the AGP operates is illustrated in Figure 3. The horizontal axis shows the fraction of applicants (mainly university academics) supported by the AGP while the vertical axis shows the level of PDRA and Technical effort supported (in FTE), based on the budget available in the 2018 round. For the given average level of applicant FTE supported (the sloping lines shown in the plot) one can see the simple trade-off between the fraction of the applicants that are supported at the given level and the PDRA/Tech FTE support available. As an illustration, the outcome of the 2018 round in this parameter space is indicated by the green dot. The AGP has recommended funding 40% of applicants at an average of 0.15 FTE each and is thus able to support ~76 FTE of PDRA and Technical effort. This figure demonstrates the relationship between applicant and PDRA/Technical support and illustrates the limited flexibility available to the AGP in terms of the overall funding allocation.

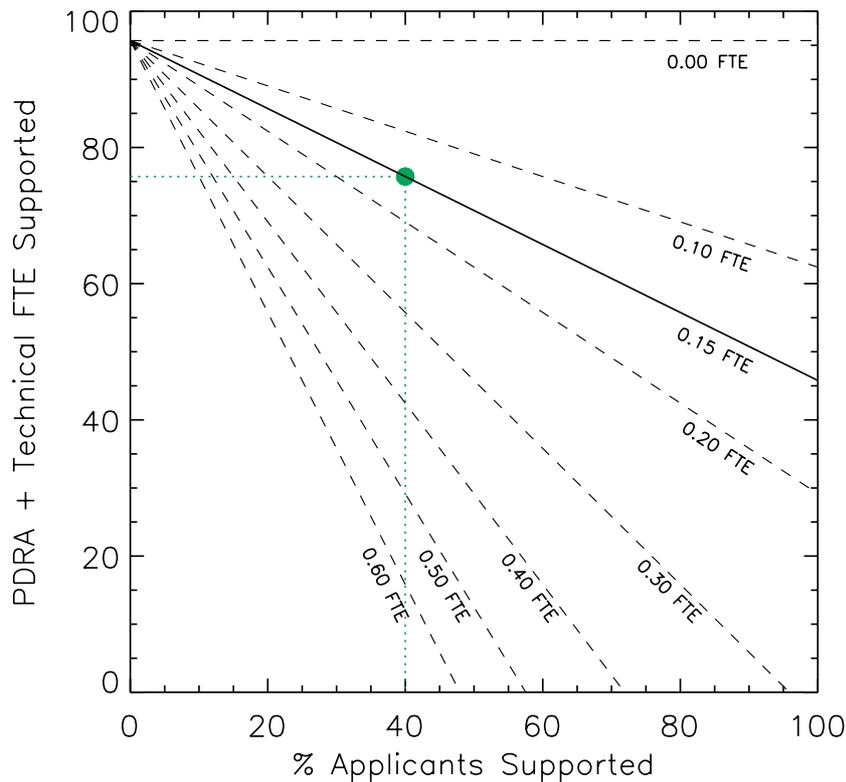


Figure 3: The relationship between the percentage of applicants supported (horizontal axis) and the level of PDRA and Technical FTE support available (vertical axis) in the 2018 round for various levels of average applicant FTE. The outcome of the 2018 round is indicated by the green dot: 40% of applicants were funded (at an average 0.15 FTE each) alongside ~76 FTE of PDRA/Tech effort.

Issues emerging from the 2018 round

The median size of a recommended consolidated grant award in the 2018 round is 2.0 PDRA's with 0.6 FTE of applicant support. The largest institutes have roughly 4 times this level of support, though these are outliers in the distribution. Many excellent groups have been awarded nothing. Excluding New Applicant proposals, which naturally tend to be small in scope, in this round nine Consolidated/Consortium Grants are recommended for no support, while six are expected to be awarded a single PDRA. Together these cases make up 50% of the consolidated/consortium applications submitted. It is not clear whether the consolidated grant process is justified for these very small awards and the upcoming review of Consolidated Grants is welcomed as an opportunity to explore this fitness-for-purpose with the relevant stakeholders.

AGP also welcomes what appear to be early indications of restraint from the community in terms of the scope of requests for support and the AGP will continue to engage with the community to encourage applications while managing expectations. Additionally, there is an apparent pause in the previously relentless growth in the size of the community of applicants, which might be welcomed, however that this might be due to a perception that the Consolidated Grants scheme is so under-resourced that it is not worth the effort of applying. The AGP shall continue to monitor this trend in future.

As with recent years, the fundamental problem that faces AGP is the insufficient level of funding made available in the astronomy area for exploitation and blue-skies technical development. This is

due to the combination of a flat-cash settlement and inflation, the development of ever more complex and capable facilities. While this problem has been mitigated by the success of many researchers in winning ERC support – a source which may disappear in the near future with Brexit – a significant shortfall remains. The constraints of the flat-cash landscape are exacerbated by super-inflationary rises in the estates and indirect costs charge by institutions seeking support from the AGP. Comparing costs for those institutions funded in the 2015 round that have also submitted applications in the 2018 round, combined Estates and Indirect costs have risen by around 16% on average when normalised to the FTE requested. Changes between the rounds is uneven across the institutions, with some of the largest (in terms of FTE request) and most costly institutions (in terms of £/FTE) in the 2015 round showing the biggest increases, some in excess of 50%. While it is stressed that these cost considerations *do not* form part of the peer review process, the impact is obviously very real as it pushes the funding cut-off closer to the top of the ranked list of projects. It is estimated that the impact of these cost increases was ~3 fewer PDRA posts in the 2018 round.

Safeguarding against bias

I would like to take this opportunity to reassure the community that the AGP takes issues around the robustness of its decisions very seriously. As well as having a safeguarding briefing during the round’s kick-off meeting, and at the start of each panel meeting, one of the AGP Chair’s key responsibilities during the meetings (shared with the Deputy Chair and the STFC staff) is to try and mitigate wherever possible against the conditions that can open the door to unconscious bias. AGP has strived to build a culture in the panel meetings where individuals feel able to call out potential biases in colleagues whenever they should arise.

For the 2018 round, the AGP took advantage of a UKRI initiative and invited an external consultant psychologist to observe the panels and identify the extent to which bias is evident in our process, and where opportunities exist to make the process more objective. Although the final report is not yet available, the preliminary findings indicated that AGP’s levels of bias are "less than that seen in many other research panels" and it was recognised that this was directly influenced by the level of structure that has been introduced to the process, and the consistent reference to evidence and criteria. I look forward to reviewing the full report and its recommendations.

As part of this safeguarding, it is prudent to periodically evaluate the outcomes AGP’s deliberations to check for biases that might be creeping in. In terms of gender breakdown of grant applications, the UK astronomy community is very consistent. Aggregating across the last three AGP rounds (2016, 2017, and 2018), the breakdown of the 753 applicants where the gender is known shows an 82% male/18% female split. Among the 115 grants PIs there is an 80% male/20% female split, while among the 654 identifiable lead applicants on individual projects (“Project PIs”) among the New Applicant, Consolidated Grant and Consortium Grant applications, there is an 82% male/18% female split. The success rates of projects considered by the AGP is presented in Table 1. This indicates that a project led by a female applicant is as equally likely to be funded as a project led by a male applicant.

	Number of projects	All projects	Projects with a male PI	Projects with a female PI
% Projects Funded	247	38%	38%	39%
% Projects Unfunded	407	62%	62%	61%

Table 1: The success rates of projects considered by the AGP, broken down by the gender of the project’s lead applicant.

It is also worth exploring whether or not the gender of a project’s AGP Introducer has an impact on success rates. Looking again across the last three AGP rounds (in other words looking across applications from the whole of the UK astronomy community) it is possible to track the success rate of projects based on the gender of the applicant and the gender of the AGP Introducer. Table 2 presents a summary of the percentage (and number) of projects funded broken down by the genders of both Introducer and Project PI, and reveals no statistically significant differences.

		Project PI Gender	
		Female	Male
Introducer gender	Female	39% (11 projects)	36% (50 projects)
	Male	39% (34 projects)	38% (152 projects)

Table 2: The success rates of projects considered by the AGP, broken down by the gender of the project’s lead applicant and the gender of the project’s AGP Introducer. The number of successful projects in each category is shown in brackets.

Since taking on the AGP Chair role in 2017, I have noted concerns in some parts of the community that success rates for institutions with a panel member serving on the AGP are higher than those where there is no one from that institution on serving on AGP.

The AGP relies upon the willingness of members of the UK astronomy community to serve as panel-members in order to function. Of course, this means that panel members are also applicants in the process, and AGP has always managed these conflicts of interest. Most panel-members serve three-year terms and the Consolidated Grant system is set up such that applicants apply once every three years. Consequently, most panellists will have a major conflict as some point during their “tour of duty” (i.e. when their own institution’s grant application is under review). However, other institutional conflicts can arise, for example if another group or department at a panelist’s institution submits an application to the AGP. In such cases, it is not unusual for the panel-member to be unfamiliar with the applicants or their work, but there is still a clear (institutional) conflict of interest. There are also a wide variety of professional, personal and financial conflicts that can arise.

STFC has clear [guidelines](#) on the management of conflicts of interest. During an AGP round, panel-members indicate potential conflicts early in the process and are absent from the room when any applications they are conflicted with are discussed. Very occasionally, a conflict of interest might emerge part-way through the review process. In such cases, panel-members flag the conflict as soon as it becomes apparent and the conflict can then be managed by the Chair, Deputy Chair and the STFC staff (usually by re-assigning Introducer and/or Reader duties for the relevant application and conflicted panel member taking no further part in the review and assessment). In cases where the Chair is conflicted, the Deputy Chair is able to lead the panel discussions while the Chair is absent from the room. It is my experience that panel-members err on the side of caution and tend to recuse themselves from the discussion (and leave the room) even for very minor conflicts. The assessment of the external consultant observing aspects of the 2018 round was that the conflict of interest process is clearly defined in the AGP documentation shared with panellists, and during the meeting, individuals recognised when they had a conflict, and were quick to leave the room at the appropriate time.

Despite these safeguards, any perception that AGP is biased toward applications from panel-members’ own institutions is a concern. If un-checked it could undermine confidence in the process.

If the integrity of the panel or individual panel-members is called into question, it is also likely to dissuade members of the community to undertake this (often onerous) service role in the future.

With this in mind, an analysis of success rates for applications with panel-member conflicts has been undertaken. Of the 665 projects considered across the last three AGP rounds, 402 (60%) had a panel-member conflict. In terms of outcomes, 156 (39%) of the projects with a panel-member conflict were funded, while 92 (35%) of projects without a panel-member conflict were funded. The expectation, based on a null hypothesis that there is no difference between success rates for projects with or without a panel-member conflict, is that 150 (37%) of the projects with a panel-member conflict would be funded and 98 (37%) of projects without a panel-member conflict would be funded. The observed departure from the expected outcome corresponds to 6 (out of 248) funded projects. The small differences in success rates for conflicted and non-conflicted projects is not statistically significant and could very easily arise by random chance, i.e. we cannot reject the null hypothesis. Based on this analysis of the three most recent AGP rounds, there is no evidence that panel-member conflicts lead to higher funding success rates. Nevertheless, the AGP shall continue to monitor the outcomes of its review process to check for signs of bias.