



DiRAC Resource Allocation Committee

Astronomy and Cosmology Sub-Panel Video Conference

Wednesday 25th January 2023

Attendees

Prof Andrew Pontzen, UCL, Chair
Dr Chris Bouchard, University of Glasgow (Chair of the Particle Physics and Nuclear Theory Sub-Panel)
Dr Katy Clough, University of Oxford
Prof Rob Crain, Liverpool John Moores University (Deputy Chair)
Dr Payel Das, University of Surrey
Dr Ingo Mueller-Wodarg, Imperial College London
Dr Rebecca Nealon, University of Warwick
Dr Heather Ratcliffe, University of Warwick
Dr Dimitris Stamatellos, University of Central Lancashire
Dr Rowan Smith, University of Manchester
Dr James Wurster, St Andrews

STFC Office

██████████ (Senior Programme Manager)
██████████ (Secretary)

Apologies

None

1. Meeting introduction

1.1. The Chair welcomed the Panel to the meeting, and round table introductions were made. The aim of the meeting is to consider the DiRAC RAC proposals received in the 15th Call. The role of this Sub-Panel is to decide if the proposals have provided adequate justification of the resources requested on scientific and management grounds, to agree the ranking order following the scoring of each proposal and identify whether any sub-projects are unfundable or lower priority than others within the same proposal. The Sub-Panel will consider the written proposal, the reviewer reports, and the PI response to these. ██████████ provided the Panel with a presentation titled "Safeguarding Objective Decision Making" which is a presentation given to all STFC Peer Review Panels and provides an overview of the peer review process. Following last year's continuous improvement process, there have been a number of changes to this Call as follows:

- Page limits and the number of Reviewers is now calculated depending on the level of request rather than just their Project being Short, Thematic or RSE.

- Applicants have been asked to address some EDI questions as part of their Management Plan. The responses are not part of the formal assessment criteria and should not have an impact on the score the Panel gives in the meetings. We cannot take any action against individuals if any answers are unsatisfactory, but we can ask

for further clarification or a strengthened commitment if required.

- Applicant's staff time on thematic proposals should be clearly documented in the Management Plan as a % FTE across the working week.

- The RAC Additional Scoring Criteria will now comprise 10% of the overall score for the proposal rather than having the potential to deduct 20% from the overall score.

- 1.2. Each proposal has been allocated an Introducer who will lead the discussion on the proposals allocated to them and also draft the feedback to the applicants. The overall scores given by this Panel were based on an average covering scientific excellence and data and project management. The technical aspects of the proposals have been assessed and scored by the DiRAC Technical Working Group (TWG). The score from the TWG has been entered into the overall score spreadsheet and is included in the overall score for each proposal.
- 1.3. The Panel submitted initial scores for each proposal in advance of this meeting which were used to produce the pre-meeting ranking list. This was shared at the start of this meeting. During the meeting Panel Members could amend their scores if they wished (based on evidence) at the end of the discussion of each proposal. At the end of the meeting, the final scores were used to produce a new ranking list for the Panel's agreement. Proposals were scored on a scale of 0-10 with 10 being the highest.
- 1.4. The DiRAC RAC Preliminary meeting will take place on Monday 27th February 2023 and the DiRAC RAC Main Panel meeting will take place on Friday 10th March 2023 where the final allocations on each machine will be agreed.
- 1.5. Conflicted Panel Members will leave the video conference and then re-join once the relevant proposals have been discussed.

2. Discussion of Astronomy and Cosmology Thematic Projects

2.1. ACTP315, Prof Richard Alexander (University of Leicester): Understanding structures in planet-forming discs

Introducer: [REDACTED], Conflicts: **Dr R Nealon**, Dr H Ratcliffe

[REDACTED]

Overall Score: [REDACTED]

2.2. ACTP316, Dr Josu Aurrekoetxea, University of Oxford: Strong gravity signatures of cosmic strings

Introducer: [REDACTED]

[REDACTED]

[REDACTED]

Overall Score: [REDACTED]

2.3. ACTP317, Dr Weiguang Cui, University of Edinburgh: The THREEHUNDRED PROJECT: high and ultra-high resolution galaxy cluster simulations with updated GIZMO-SIMBA

Introducer: [REDACTED]

[REDACTED]

[REDACTED]

Overall Score: [REDACTED]

2.4. ACTP318, Prof Victor Debattista, University of Central Lancashire: The evolution of the Milky Way and Andromeda

Introducer: [REDACTED], Conflicts: Dr Dimitris Stamatellos

[REDACTED]



Overall Score: [redacted]

2.5. ACTP319, Prof Robertus Erdélyi, University of Sheffield: Radiative MHD simulations of solar spicules and coronal swirls in presence of magnetic flux emergence

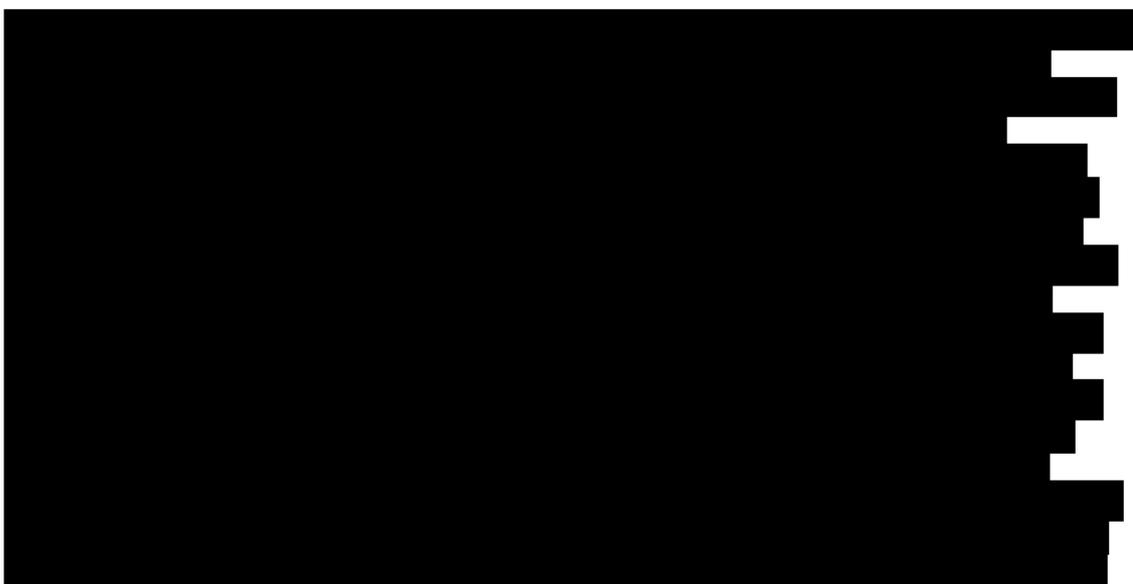
Introducer: [redacted]



Overall Score: [redacted]

2.6. ACTP320, Dr Francesca Fragkoudi, Durham University: GalaCSi-Dark: Galactic dynamics in high resolution Cosmological Simulations for shedding light on Dark Matter

Introducer: [redacted], Conflicts: Prof Rob Crain



[REDACTED]

[REDACTED]

Overall Score: [REDACTED]

2.7. **ACTP321, Dr Celine Guervilly, Newcastle University: MHD modelling at Newcastle University**

Introducer: [REDACTED]

[REDACTED]

Overall Score: [REDACTED]

2.8. **ACTP322, Dr Will Handley, University of Cambridge: New frontiers in particle cosmology**

Introducer: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Overall Score: [REDACTED]

2.9. **ACTP323, Dr Harley Katz, University of Oxford: PRISM-XL**

Introducer: [REDACTED]

[REDACTED]

[REDACTED]

Overall Score: [REDACTED]

2.10. **ACTP324, Dr Anna Penzlin, Imperial College London: Protoplanetary discs and their interactions with emerging objects**

Introducer: [REDACTED], Conflicts: Dr Ingo Mueller-Wodarg

[REDACTED]

[REDACTED]

[REDACTED]

Overall Score: [REDACTED]

2.11. ACTP325, Prof Debora Sijacki, Cambridge University: Hydrodynamical simulations of cosmic structure formation at KICC: a multi-messenger view of galaxies and their central black holes

Introducer: [REDACTED]

[REDACTED]

Overall Score: [REDACTED]

2.12. ACTP326, Dr Ingo Peter Waldmann, UCL: Characterization of exoplanet atmospheres with JWST

Introducer: [REDACTED], Conflicts: Prof Andrew Pontzen

[REDACTED]

Overall Score: [REDACTED]

2.13. ACTP327, Dr Kai Hou Yip, UCL: In Search of an Interdisciplinary Solution for Scalable Planetary Characterisation

Introducer: [REDACTED], **Conflicts:** Prof Andrew Pontzen

[REDACTED]

[REDACTED]

[REDACTED]

Overall Score: [REDACTED]

2.14. ACTP328, Dr Alison Young, University of Edinburgh: Fragmenting protoplanetary discs in the cluster environment

Introducer: [REDACTED]

[REDACTED]

[REDACTED]

Overall Score: [REDACTED]

2.15. ACTP329, Prof Sergey Yurchenko, UCL: Spectroscopy of exoplanets in the era of JWST

Introducer: [REDACTED], Conflicts: Prof Andrew Pontzen

[REDACTED]

Overall Score: [REDACTED]

3. Discussion of Astronomy and Cosmology Short Projects

3.1. ACSP330, Prof Matthew Bate, University of Exeter: The Dependence of Star Formation on Redshift and Metallicity

Introducer: [REDACTED]

[REDACTED]

Overall Score: [REDACTED]

3.2. ACSP331, Dr James Bolton, University of Nottingham: The Lyman-alpha forest as a probe of dark matter and the reionisation era

Introducer: [REDACTED]

[REDACTED]

Overall Score: [REDACTED]

3.3. **ACSP332, Dr Philip Bull, University of Manchester: Hydra: Ultra-high dimensional Bayesian sampling for 21cm surveys**

Introducer: [REDACTED], Conflicts: Dr Rowan Smith

[REDACTED]

Overall Score: [REDACTED]

3.4. **ACSP333, Dr Cheng Chen, University of Leeds - previously Leicester at time of submission: Dynamic accretion in astrophysics**

Introducer: [REDACTED]

[REDACTED]

[REDACTED]

Overall Score: [REDACTED]

- 3.5. **ACSP334, Dr Gavin Coleman, Queen Mary University of London: Using GPUs to Explore Evolved and Forming Planetary Systems with Hydrodynamic Simulations**

Introducer: [REDACTED], Conflicts: Dr Ingo Mueller-Wodarg, Dr Katy Clough

[REDACTED]

Overall Score: [REDACTED]

- 3.6. **ACSP335, Dr Simon Daley-Yates, University of St Andrews: Riders on the storm: prominence ejection in active stars**

Introducer: [REDACTED], Conflicts: Dr James Wurster

[REDACTED]

Overall Score: [REDACTED]

- 3.7. **ACSP336, Dr Anastasia Fialkov, Cambridge University: Probing the Effects of Unique Fuzzy Dark Matter Dynamics on the First Star Forming Regions**

Introducer: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Overall Score: [REDACTED]

- 3.8. **ACSP337, Prof Andrew Hillier, University of Exeter: Mixing and Reconnection in the Radiative Solar Chromosphere**
Introducer: [REDACTED]

[REDACTED]

Overall Score: [REDACTED]

- 3.9. **ACSP338, Miss Xinmiao Hu, University of Oxford: Jupiter atmospheric dynamics with water-ammonia hail parameterization**
Introducer: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Overall Score: [REDACTED]

3.10. ACSP339, Prof Henrik Latter, Cambridge University: Magnetohydrodynamics of the inner regions of protoplanetary discs

Introducer: [REDACTED]

[REDACTED]

Overall Score: [REDACTED]

3.11. ACSP340, Dr Christopher Lovell, University of Portsmouth - previously Hertfordshire at time of submission: CAMELS-EAGLE: extending the CAMELS suite to new astrophysical models and cosmic environments

Introducer: [REDACTED]

[REDACTED]

Overall Score: [REDACTED]

3.12. ACSP341, Dr Matthew Middleton, University of Southampton: Exploring global precession of super-critical accretion flows

Introducer: [REDACTED]

[REDACTED]

[REDACTED]

Overall Score: [REDACTED]

- 3.13. **ACSP342, Dr Natalia Porqueres, Beecroft Institute, Oxford University: Making full use of weak lensing data: precision cosmology using gravity models**
Introducer: [REDACTED], Conflicts: Dr Ingo Mueller-Wodarg

[REDACTED]

Overall Score: [REDACTED]

- 3.14. **ACSP343, Dr Stuart Sim, Queen's University Belfast: Monte Carlo radiative transfer simulations for merger models of thermonuclear supernovae**
Introducer: [REDACTED]

[REDACTED]

Overall Score: [REDACTED]

- 3.15. **ACSP344, Dr Freeke van de Voort, Cardiff University: The refined circumgalactic medium around massive galaxies**
Introducer: [REDACTED]

[REDACTED]

[REDACTED]

Overall Score: [REDACTED]

3.16. ACSP345, Dr Vishnu Varma, Keele University: GPU-SHYNE: GPU-acceleration of Stellar HYdrodynamics, Nucleosynthesis and Evolution

Introducer: [REDACTED]

[REDACTED]

Overall Score: [REDACTED]

4. Discussion of Astronomy and Cosmology RSE Projects

4.1. [REDACTED]

[REDACTED]

Overall Score: [REDACTED]

4.2. [REDACTED]

[REDACTED]

Overall Score: [REDACTED]

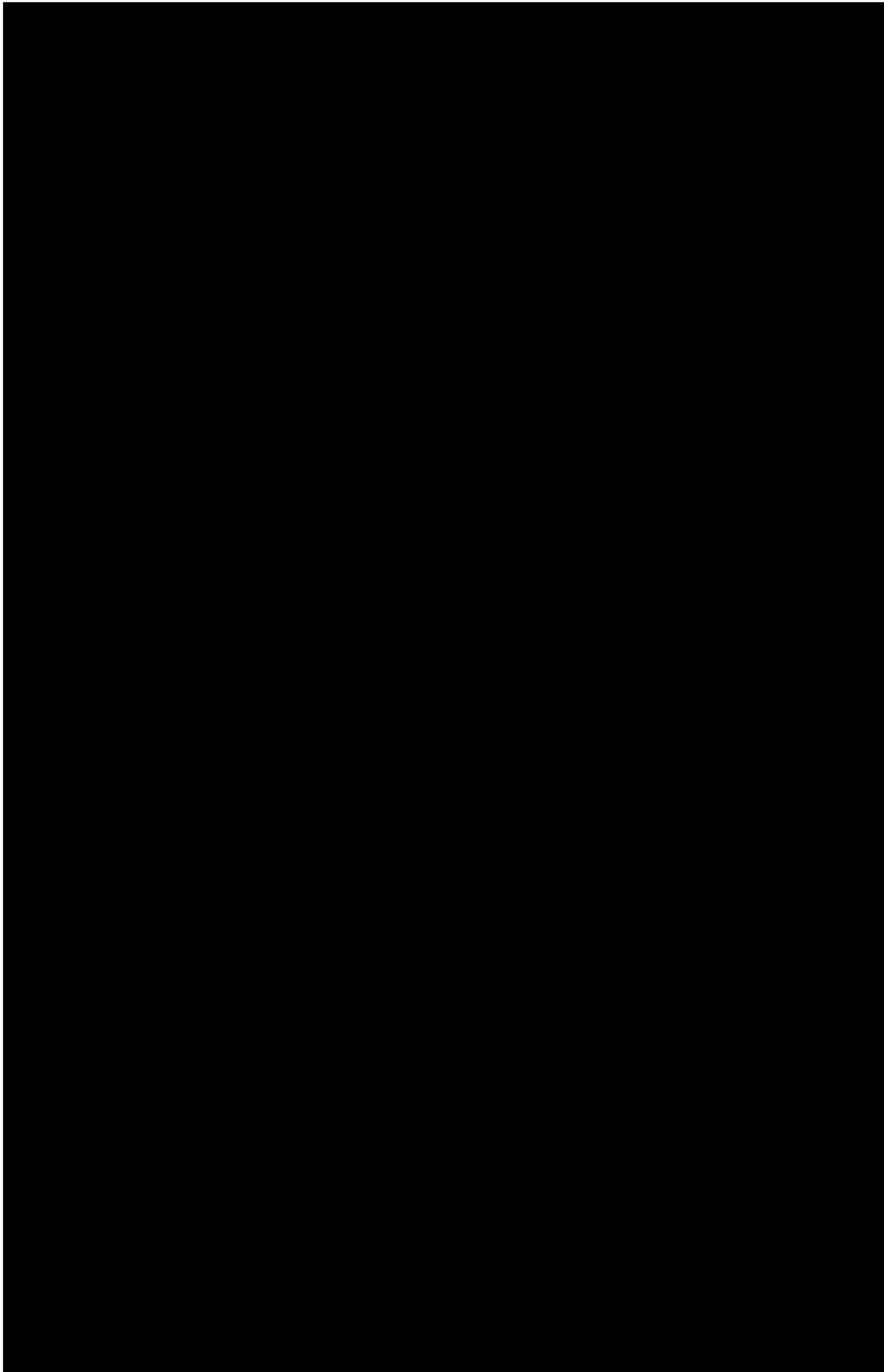
5. Overall discussion of scores, ranking, movement of any proposals, and agreement of recommended allocations

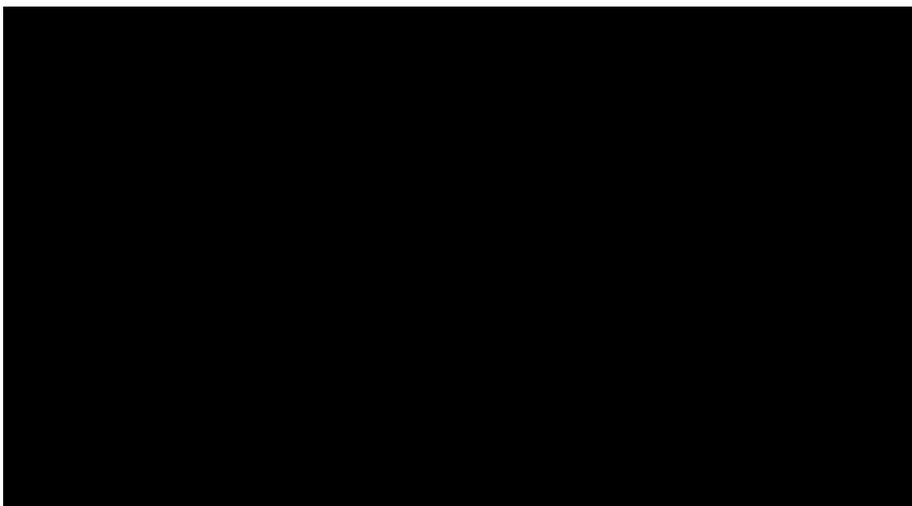
5.1. Any Panel members who wished to amend their scores did so after the discussion of each proposal, and the revised scores have been taken into account to show the

below ranking list. The Panel was happy with the ranking list after amending their scores for two proposals which had the same score (based on evidence). All the proposals were considered fundable except where specific adjustments have been identified and any overlaps will be investigated following the meeting. Should any uniform scaling be required as a result of oversubscriptions, it is proposed that this is done based on the ranking position below. The ranking list and any specific recommendations on proposals will be shared with the DiRAC Technical Manager for the preparation of scenarios for fitting the recommended allocations within the available resources on the DiRAC systems.

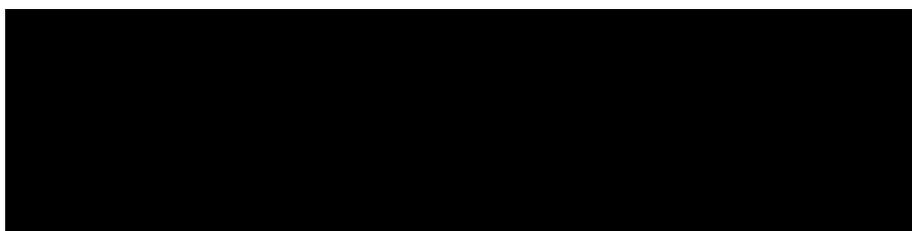
5.2. Ranking list

Thematic and Short Proposals



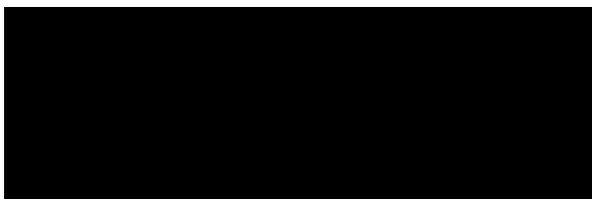


RSE Proposals



The Panel has confirmed they are agreeable with the new ranking list.

- 5.3. The Panel flagged the below proposals and would like to refer them to the Technical Team for further guidance as discussed above:



6. Planning for the 16th Call

- 6.1. The Chair invited the Panel to raise any issues or comments regarding the processes for the 15th Call. The Panel agreed to keep the page limits and reviewers the same in the 16th Call as it seems to have worked well and they had no complaints from the applicants. The PIs had to answer EDI questions in this call, and despite not being able to assess the answers at the moment the Panel felt it was a good prompt for the PIs to think more about what they are doing for EDI and to encourage them to do more. The Panel felt although they can't act upon what the PIs have noted it is a really valid update and a positive change. Currently the framework is being reviewed to see whether UKRI/STFC can make it part of the assessment criteria, and whilst nothing has changed yet since this was last discussed as part of the enhanced continuous improvement exercise, hopefully in time UKRI will amend the framework to add this to the assessment criteria.
- 6.2. A question had been asked as to whether applicants were allowed to veto any Reviewers reports. At present, there is no strong case to do this, nor is there any need to allow the applicants to select their own Reviewers.
- 6.3. The Panel found it useful to hold the Project Reporting exercise later in the year with the meeting being held in January compared to previous years where this was held

during the summer. Whilst it was appreciated that the assessment of RAC proposals must be based on the assessment criteria and no knowledge outside of the written process can be taken into consideration, further work would be carried out to look at how there can be more coherence between the Project Reporting meeting and the RAC calls.

- 6.4. At present, only the PIs and Co-Is on Thematic proposals are asked to provide their % FTE across the project, but it was suggested that this information is provided for everyone working on the proposals. This information should also be provided by applicants for Short proposals going forward.

7. Membership

- 7.1. The full term of membership of the Chair of the Astronomy and Cosmology Sub-Panel, Andrew Pontzen, is due to end in October 2023 after 6 years' service. Heather Ratcliffe's term will also come to an end in October 2023 after 6 years' service. Andrew and Heather were thanked for all of their time and efforts on the Panel. Katy Clough and Dimitris Stamatellos membership is set to expire in September 2023 after serving 3 years and they were thanked for their work on the Panel. They have the option to extend their membership for a further 3 years, and they will confirm shortly whether they wish to extend their membership by another term to 30th September 2026.

8. Any other business

- 8.1. No other business had been recorded.

9. List of Actions

	Action Description	Responsibility	Resolve by date
1.	[REDACTED]	[REDACTED]	Preliminary Meeting - 27 th February 2023
2.	[REDACTED] <i>Amend guidance in advance of RAC16 to ask applicants to clarify how they will manage conflicting demands if they are Co-Is on other proposals.</i>	STFC	Preliminary Meeting - 27 th February 2023 RAC16
3.	[REDACTED]	[REDACTED]	Preliminary Meeting - 27 th February 2023
4.	[REDACTED]	[REDACTED]	Preliminary Meeting - 27 th February 2023

5.	[REDACTED]	STFC	The date the allocation letters are sent out
6.	[REDACTED]	STFC / [REDACTED] STFC	Preliminary Meeting - 27 th February 2023 The date the allocation letters are sent out
7.	[REDACTED]	STFC	The date the allocation letters sent out
8.	[REDACTED]	STFC	The date the allocation letters sent out
9.	[REDACTED]	STFC	Preliminary Meeting - 27 th February 2023
10.	[REDACTED]	STFC	Preliminary Meeting - 27 th February 2023
11.	[REDACTED]	STFC	Preliminary Meeting - 27 th February 2023