

'Supporting the future of astronomical research: the critical need for long-term funding of essential coordination and infrastructure roles (FutFunding)'

Abstracts

Talks

Integration Experts: Building Cohesion and Productivity in Complex Research Environments

Authors

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Abstract

Integration experts are emerging as key actors in contemporary research environments shaped by large-scale, interdisciplinary, and highly collaborative projects. They work at the interfaces between disciplines, institutions, and sectors, facilitating both interdisciplinary integration (across scientific domains) and transdisciplinary integration (between science, policy, and practice). Their roles span coordination, mediation, translation, and the design of processes that enable collaboration, shared understanding, and collective problem-solving. Integration expertise thus refers to a distinct set of skills, methods, and reflexive practices required to align diverse knowledge systems, manage complexity, and support collaboration in dynamic research settings.

This expertise is increasingly critical as research takes place within complex learning environments characterised by multi-team systems, where researchers contribute to multiple, often distributed and hybrid (including virtual) teams pursuing shared goals. Evidence from the Science of Team Science and Science and Technology Studies shows that such teams frequently underperform, particularly in the absence of cohesion, shared vision, and effective integration mechanisms. Without dedicated integration, fragmentation, misalignment, and communication breakdowns can limit both scientific productivity and innovation.

Despite being central to the success of scientific research including Astronomy and Space Science, integration expertise remains structurally under-recognised and underfunded within academia. This has consequences not only for research outcomes -- impacting productivity, collaboration quality, and ultimately frameworks such as REF -- but also for research culture, including wellbeing, inclusion, and the sustainability of collaborative work.

Integration experts contribute to healthier, more supportive research environments by fostering trust, inclusivity, and shared ownership.

In response, there is a growing need to strengthen integration expertise across scientific communities, develop shared resources and practices, and create institutional pathways that recognise and support integration as a core academic function. I will speak to the movement of integrating the integrators and conclude by outlining five key actions for strengthening integration in research systems.

The Technical Research Scientist 5 Years On: Persistent Precarity and the Recognition Gap in Big Data Astronomy Infrastructure (Invited) (Online)

Authors

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Abstract

In February 2022, we organized a RAS Specialist Discussion to formally identify a new class of researcher: the Technical Research Scientist (TRS). These specialists are the bedrock of milestone projects like Gaia, WEAVE, and the SKA, dedicating their expertise to critical long-term deliverables—such as software pipelines, instruments, and data products—that benefit the entire community. However, because their day-to-day work is fundamentally different from traditional research exploitation, they remain largely excluded from standard academic career paths. Despite previous recognition from funding bodies like the STFC regarding the need for clear career structures, many of these essential figures continue to be funded on short-term research assistant grants that offer no long-term stability or clear route to a permanent university position.

Four years later, astronomy has firmly arrived in the era of big data, but the "career pathway problem" remains a major risk to the success of our large-scale consortia. This talk provides a critical update on the state of these roles, moving beyond the "leaky pipeline" analogy to examine how current institutional structures can actively push talented personnel out of the field. Drawing on broad knowledge of multiple facilities, I will discuss the scientific and efficiency costs of losing highly-specialized institutional memory and the growing "recognition gap" that occurs in collaborations with thousands of members. This presentation aims to provide the foundational evidence needed to develop the session's action plan for establishing viable, long-term funding pathways for astronomical infrastructure roles in Europe

Creative ground based projects and space missions in an era of little funding

Authors

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Abstract

Since about 2005 the government introduced the full economic costing model for research grants. While this never paid the full costs, it gave the universities significant income although this came at the cost of the volume of research. The bulk of this funding ended up being used for new buildings/refurbishments but often, a small slice could be obtained by scientists for killer projects - if you could convince University management. So while the central Astronomy budget has stagnated, millions of pounds was attracted into the programme through this route (often with unseen risks to the universities). These creative projects relied on talented technically minded individuals - often with an astronomy background, who dedicated themselves to make these projects happen and often with little job security. Over the years we have “educated” Warwick to appreciate these individuals and a number are permanently employed on technical/academic pathways. Our “technical” staff are recognised as talented individual and do have a real career path.

I’ll also discuss funding for a large space project and the retention of technical staff. It is well known that Space project funding often comes in yearly lumps. Again this gives no career structure let alone security for staff. At Warwick our Space project staff are employed on permanent contracts and again are seen as assets. This not only helps the smooth running of our projects but helps our staff retention in what are stressful positions.

The Collaborative Turn in Modern Astrophysics: Aligning Institutional Infrastructure with the Evolution of Research (Invited) (Online)

Authors

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Abstract

As astronomical research scales into massive, international "Big Science" collaborations, the work required for success has shifted toward complex data integration and technical coordination. However, academic infrastructure often remains optimized for traditional, single-investigator models. In this talk, I apply "science of science" methodologies to examine the evolution of these collaborative ecosystems.

I discuss the documented "interdisciplinary hurdle" we observed in the U.S. biomedical research, where researchers who engage in highly interdisciplinary research face institutional displacement despite the high impact of their work. By examining how current promotion and funding metrics can inadvertently marginalize the very expertise required for large-scale projects, I highlight the systemic risks to the sustainability of modern research and discuss the necessity of aligning training and reward systems with the realities of team-based science.