

'Bridging Perspectives: Art and Science in Collaboration (ArtScience) and Nonlinear Learning Pathways (PathWays)' Abstracts

Talks

Aurora Art Workshops & 'Seren and the polar bear cub' children's fiction book

Authors

Sadie Jones (1)

(1) University of Southampton

Abstract

We present our new cross-disciplinary, science-art workshop, Aurora Art and the children's fiction book 'Seren and the Polar Bear Cub'. The workshop has achieved an average enjoyment rating of 4.8/5 and more than 700 people have produced scientifically informed aurora artwork. In the workshops over 3,000 classifications have been carried out on our Aurora Zoo citizen science website, which directly links to University of Southampton (UoS) Space Environment Physics (SEP) research.

Based on our evaluation data, we can show the Aurora Art participants gained knowledge of the shapes, movement and colours of the aurora. They also learned how important the SEP expeditions to Svalbard are and understand the challenges that face scientists doing field work in the Arctic.

Dr Sadie Jones wrote 'Seren and the Polar Bear Cub' after returning from an expedition with the SEP group. The book engages the public with real aurora science through storytelling. Readers also gain an insight into the plight of the polar bears and the effects of climate change. Over 1,400 copies have been distributed and the book has received nineteen 5-star reviews across readers aged 8 to 79; with two Year 5 students dressing up as Seren for World Book Day in March 2025. Some reviews of the book are presented below:

I thought the book was really exciting. I read the book before bed and at the end of the chapter I always wanted to know what was going to happen next. I really liked that it was about the aurora because I really want to see it in real life. I have read the book 5 times now because I love it so much! – Seren, aged 8;

I loved the adventure and mystery whilst learning about space. It is the best book I have read and I couldn't stop reading it! – Immy, aged 9;

I really loved the book. I haven't had the attention to focus on a book in two years, and it kept me hooked. The way Seren was written felt very reflective of my younger self, and I enjoyed learning about Aurora along the way. - Rhianna, aged 20;

I'm an adult just starting my space-science career, but I still absolutely loved this book and wish I could have read it when I was younger! It is the perfect balance of adventure, real

science (even more exciting than science fiction!) and a little bit of arctic magic. The very last line made me tear up a bit on reflection of how far I've come since I was Seren's age. I hope many more children will be inspired by this book to feed their curiosity and take an interest in science. - Kate, aged 22;

Fascinating and amazing! I was gripped by the story and know that the age group (9-13) is perfect for it! -Chrissie, aged 76;

I bought the book for my 10-year-old grandson from Australia who has ADHD. Then I read it myself before giving it to him – Wow! Really well written and suitable for adults as well as young people. – Sue, aged 79

Astronomy and Poetry – Developing a Conversation. (Invited)

Authors

Shirley Harding. (1)

(1) University of Birmingham.

Abstract

In this talk I will discuss the project I am developing for my Masters in Interdisciplinary Studies. The question I address is: To what extent can theoretical abstractions like 'uncertainty' 'probability' and 'complementarity' be imagined in astronomical poetry? Physics and cosmology have a relationship with astronomy and will also inform the work. The reason for my project is the exciting possibility of linking astronomy and poetry. I believe poetry is an underused medium for the articulation and communication of scientific theory and phenomena. In April 2024 I attended the Birmingham Science and Literature conference at the University of Birmingham. Science students were submitting papers linking the disciplines. Ideas from novels were reinterpreted, but there was no poetry. There is a need for further conversations between the disciplines.

In the talk I will discuss how I write poetry. I will read examples of my work and welcome comments. Poetry has a transient nature and cannot be exerted according to the will. Yet this is what I will attempt. In this sense, like much in science, the project is experimental and unpredictable.

In a critical analysis, I will study the conception and evolution of my poetry. I play with words. I will ask if this has detracted from or illuminated the science. At the recent Helios launch at the Exchange in Birmingham, Luke Jerram said he wanted his art to achieve a 'multiple door entry'. I aim to ensure my poetry is accessible at different levels i.e. for young people and adults.

The research will explore the relationship between creativity – the making of something original, and the imagination, which being devoid of commitment is free to allow play with different hypotheses. It is my view collaboration with astronomers might, ultimately, elevate research outcomes and assist public engagement with complex issues.

Could Girlguiding Members Be the Next Space Explorers?

Authors

Jenni French (1)

(1) University of Birmingham

Abstract

Girlguiding is the world's largest youth organisation for young women and girls and despite trying to encourage girls to pursue whatever they want in life, there is a very limited STEM offering. Lots of young women & girls are actively interested in space, and would like to learn more, but are scuppered by a lack of available opportunities. In my own units, Guides have told me they believe scientists look like old white men, and they don't envision themselves in those roles.

The IOP ran a successful 'I am a Physicist' challenge badge with different sections (ages), but this required travel to the IOP offices. The RAS also partnered with Girlguiding to make a 'Space' badge; however this is only available to Brownies (aged 7-10) and has never been extended. While there are some programme activities that are science, STEM, or space themed, the majority of Guiding Leaders don't feel comfortable running these activities as they aren't experienced in STEM themselves and often find the material unapproachable. As a result, young members miss out vital opportunities to learn more about astronomy and STEM as a whole, despite their potential interest.

As an astronomer, a Guide Leader, and a member of Girlguiding since the age of 5, I wanted to make a more approachable format for Leaders to facilitate their members learning about Astronomy. I have recently developed a Space Explorer challenge badge for all Guiding sections (age 4 up to Leaders) and I will explore the process of developing this challenge pack that, whilst being a fun opportunity to earn a new badge, enables both young members and Leaders to learn more about space in an accessible way.

Using Art to Nurture Scientific Skills (Invited)

Authors

Gareth Campbell (1)

(1) The MoSAIC

Abstract

“Artworks Unfit For Vision,” is an evolving creative project that challenges conventional visual perception by creating paintings designed to be viewed by thermal imaging. Over the last year, this work has been disseminated through a series of talks and exhibitions, showcasing my infrared paintings. I have also been working to engage diverse groups of young people in hands-on workshops that nurture key scientific skills. These sessions invite participants to experiment with non-visible light as an artistic medium, encouraging exploration at the intersection of art and science. By creating artworks intended specifically for thermal imaging, participants are introduced to alternative ways of understanding the electromagnetic spectrum.

Creating Knowledge and Practice Together: Boundary work in ArtScience collaboration

Authors

Ulrike Kuchner (1), Zeynep Birsal (2), Pieter Steyaert (3)

(1) University of Nottingham

(2) Erasmus University Rotterdam, NL

(3) University of Antwerp & University of Copenhagen

Abstract

ArtScience is a growing field in which artists and scientists collaborate across disciplinary boundaries, impacting science, technology, culture, and society. The study of this shared ecology is called Art, Science, and Technology Studies (ASTS). Drawing on two decades of practice and research, I reflect on what enables collaborations between artists and scientists to be productive, sustainable, and meaningful for all involved.

In this talk, I will introduce the key concepts and share insights from ArtScience theory and practice I (co-)lead. These projects are situated both within universities -- such as the ARTlab Nottingham, which I co-founded in the University of Nottingham's Faculty of Science -- and outside them, through the global transdisciplinary collective SEADS (Space Ecologies Art and Design), a network of over 200 ArtScience practitioners. They include the creation of the touring exhibition 'Cosmic Titans: Art, Science and the Quantum Universe', shown at Djanogly Gallery Nottingham, Science Gallery London (as Quantum Untangled), and, currently, the Jodrell Bank Centre for Engagement. The exhibition brings together artistic outcomes from two years of artist residencies embedded in physics research, resulting in immersive installations that explore cosmology and quantum phenomena while directly engaging with and intervening in scientific practice.

I will also briefly reflect on the immersive theatre project Exomoon, which I co-directed for Theatre Neumarkt Zurich, bringing together early-career astrophysicists, theatre makers, and transdisciplinary artists. Across these projects, artworks and performances move fluidly between scientific and artistic contexts, engaging both art gallery and science centre audiences.

This plurality is important. Drawing on concepts from Science and Technology Studies and Inter-/Transdisciplinary research, I discuss how artworks and performances can function as boundary objects: shared artefacts that enable different communities to collaborate without requiring full consensus. In this way, ArtScience creates spaces for artistic experimentation, reflection, and creative inquiry, alongside science communication and outreach, which is often the goal for scientists. Framing collaborations in this way helps address common challenges, such as mismatched expectations, and highlights the full creative and epistemic value of the work.

Bringing Worlds into Relation: Art, Anthropology, and the Study of Space

Authors

Lauren Reid (1)

(1) University of Leicester

Abstract

Space research such as astronomy is often framed as a technical and scientific endeavour, but it is also shaped by social relations, methods, and speculation. The social sciences have long examined how knowledge is produced, interpreted, and made meaningful within wider contexts, and are thus well positioned to contribute to understanding how scientific knowledge is shaped, communicated, and encountered.

Drawing on anthropological and curatorial practice, this presentation shows how social scientific and artistic methods can be used within studies of space-related practices. It does so through case studies from ethnographic fieldwork in Thailand, including collaborative filmmaking projects and research across different communities such as astronomers, Buddhist practitioners, and a group engaging extraterrestrial beings, foregrounding forms of ArtScience collaboration across distinct domains. These cases demonstrate how methods such as filmmaking, exhibition-making, and structured encounters can create shared spaces in which different understandings of the cosmos are brought into relation. In doing so, they make visible forms of speculative, embodied, and future-oriented experience that extend beyond what can be captured through observation and description alone.

The aim is not to propose these methods for astronomy itself, but to reflect on what they reveal for the study of space research and for ArtScience practice more broadly: how knowledge is mediated, how assumptions travel across domains, and how interdisciplinary encounters generate both friction and insight. Artistic and curatorial practices are thus approached as flexible tools for thinking with and reflecting on how knowledge about space is produced and understood across different worlds.

The Metabolic Guide To Space Survival - Art & Science collaboration towards building yeast-based life support systems for space missions (Invited)

Authors

Kristina Pulejkova (1)

(1) independent

Abstract

The Metabolic Guide to Space Survival is a multidisciplinary exploration of microbial life as a key to long-term survival in space. Framed through the voice of fictional character Chief Bioengineer Mira Kordan, age 75, living aboard the starship Möbius, the work unfolds across three interwoven forms: a speculative design toolkit, a narrative guidebook, and an architectural installation animated by holographic projections of Mira navigating life in zero gravity. Developed in collaboration with three research labs in Vienna, the project draws on contemporary bioengineering techniques to imagine a future of spaceflight sustained by yeast, fungi, and other fermenting agents.

The presentation will focus on the art-science collaboration with three bioengineering labs across three universities in Vienna, Austria, and the benefits of using XR and immersive storytelling approaches to bring complex scientific ideas to general audiences.

Post-terrestrial artists (Invited)

Authors

Barbara Brownie (1)

(1) Royal College of Art

Abstract

Dr Barbara Brownie's research explores space as a site for art and design, with a particular focus on effects of weightlessness. Her book, *Spacewear: Weightlessness and the Final Frontier of Fashion* (Bloomsbury, 2019), considers the challenges and opportunities that the commercial space age presents to fashion designers, and how weightlessness necessitates new approaches to clothing and the dressed body. Her most recent book, *Art in Orbit* (Bloomsbury 2025), explores the relationship between the arts and space sectors, and the spaceworks that demonstrate art's value in space exploration. In 2026 and 2027 she will be sending writing and artworks to space on three separate flights: one sub-orbital, one orbital, and one lunar. She co-leads the _Space research group at the RCA, a group of artists and researchers operating at the intersection of art and aerospace.

For Post-terrestrial, Brownie is curating a collection of artworks to be launched on board a sub-orbital flight in 2027. The project depends on the framing of these works strictly as 'art' and not 'research'; categories delineated by the spaceflight provider. Representing artists for whom practice and research are intertwined, the requirement to disentangle the 'art' and 'research' is at odds with arguments for the value of sending artworks into space.

Elsewhere in the sector, artists face equivalent challenges reframing their artwork as scientific experiments in order to meet criteria for launch. Where artists collaborate with scientists, or launch artworks to the ISS, official records often erase the identity of the artist collaborators or reframe the works as 'scientific experiments'. Take, for example, Osaka's *Spiral Top*, an artwork defined by the artist and JAXA as an "art project" but recharacterized in NASA's image archives as a scientific experiment. As a result, there is a hidden history of space art that goes unrecognised.

In this session, Brownie will argue that the past and current contributions of artists to spaceflight and space exploration will only be recognised if artists and their collaborators are able to openly examine how the labels, 'art' 'research' and 'experiment', are applied in the space/art context, including the implied hierarchies that shape science/art collaborations in the space sector.

I have been invited by Ulrike Kuchner to present this research as part of the session, *Bridging Perspectives: Art and Science in Collaboration*

Inviting Cosmic Perspectives in Light Polluted Places

Authors

Louise Beer (1)

(1) Freelance artist and curator

Abstract

My career-spanning project, 'Earth, a Cosmic Spectacle' began under the dark skies of Aotearoa New Zealand. Since then I have developed the project with different collaborators in towns and cities in England and Ireland, many of which exist under a blanket of light pollution.

This shift has brought about new challenges. How can audiences engage with the long and slow cosmic and planetary processes that have shaped Earth's environments, when it is increasingly difficult to make these connections in our everyday lives? The opportunity to visually experience the expansive nature of the cosmos is unevenly distributed, shaped by many factors including socioeconomics, environment, and geography. At this fragile moment, it remains increasingly important to encourage audiences to connect with the cosmos even under light polluted skies and in the presence of the growing number of satellites, in order to consider the cosmic context of all life on Earth.

This talk explores how artistic practice can respond to the erosion of the night sky, and asks how our understanding of the significance of the climate crisis may be shaped by our individual relationship to the cosmos.

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From Science to Fiction and Back (Invited)

Authors

Solmaz Farhang (1)

(1) Associate lecturer

Abstract

During this Research Practice talk, Solmaz will reflect on her work as an interdisciplinary artist operating at the intersection of art, science, and storytelling. Her practice develops participatory and embodied modes of engagement that invite audiences to inhabit speculative worlds. Drawing on Donna Haraway's concept of speculative fabulation and Ursula K. Le Guin's carrier bag theory of fiction, she will discuss how feminist science-fictional scenarios can function as tools for knowing, questioning, and reimagining the world around us, and how such methods can shift perspectives on transdisciplinary art-science collaborations.

Through a range of collaborative projects—including her latest work, *In Therapy with North Sea*, commissioned by Humber Street Gallery and the Environment and Energy Institute at the University of Hull, and *The Mirrored Universe*, commissioned by the European Space Agency—Solmaz will share insights into her research process, collaborations with scientists, and her approach to ideation and materialisation, as well as the key influences shaping her inter- and transdisciplinary practice. The talk will conclude with a discussion on the potential of speculative storytelling and participatory art to generate new ways of (un)knowing.

Solmaz Farhang is an artist-researcher based in London. She is a graduate of the MA Art & Science programme at the University of Applied Arts Vienna, co-founder of the art and design collective Danube Transformation Agency for Agency (DTAFA), and a member of the Water Innovation Lab expert team, working with Ars Electronica as part of the S+T+ARTS Aqua Motion project (2025–26).

Her artistic practice spans video, photography, drawing, and multimedia installation, and her work has been exhibited internationally at venues including Humber Street Gallery (UK), the Natural History Museum of Vienna (AUT), the National Museum of Bosnia and Herzegovina (BIH), MuseumsQuartier Vienna (AUT), Ars Electronica Linz (AUT), Kunsthalle Exnergasse (AUT), and Forum Stadtpark Graz (AUT). Most recently, she was awarded the Styria Artist-in-Residence Scholarship (2026).

Sounding the spheres: live music as the fieldwork of theoretical physics

Authors

Anna Clock / Clifford (1)

(1) Royal Holloway University of London and the Science Museum

Abstract

The increased siloing of disciplines has compounded the challenges of building truly interactive art-science collaborations. This has profound cultural effects, to the extent that although artistic methodologies are routinely used to illustrate and communicate scientific concepts to lay audiences, and may often act as the impetus for young people entering scientific disciplines, they generally hold little value within the actual processes of scientific inquiry. The role that artistic techniques play in the way scientific knowledge is created, transcribed and mediated is routinely erased under the guises of objectivity and convention. Although sound and listening practices are used in scientific contexts, they are often part of systems of 'tacit knowledge' (Bijsterveld, 2019), generally considered too subjective to comprise the materiality of that knowledge in publication.

However the hindrances of this kind of positivism become apparent when considering that the two dominant theories in theoretical physics both contain proofs against the idea of objectivity. On the one hand quantum mechanics defines space and matter as ontologically indeterminate, stating that their behaviour changes when observed, rendering them immeasurable, whilst general relativity dissolves the idea of absolute time.

It follows from this that self-consciously subjective artistic methodologies may have something to offer work of theoretical physics. In my research I build on the philosophy, phenomenology and neuroscience of listening to propose that sound, music and listening practices may open up alternative knowledge-making spaces where imagination, emotion and subjectivity can shape/reshape acts of knowing in both form and content. I apply this by building on the Pythagorean edict that music is 'maths in motion,' and drawing on parallels between the concerns of quantum field theory and those of live performance, to propose the embodied practice of playing live music as a methodology of fieldwork in theoretical physics. I argue that this interdisciplinary practice has the potential to expand scientific understanding in both material and metaphorical dimensions. Moreover, building on my practice as a composer, sound artist and improvising musician in an interdisciplinary context with physicists and mathematicians, I explore how embracing subjectivity is not in fact synonymous with sacrificing rigour - and what a cellist-in-residence in a physics department might get up to.

In this paper I will present findings from two pieces of practice: Tacit Knowledge, a performance in which a blindfolded musician improvises a sonic 'reading' to a single audience member at a time, and a collaboration with the Sonic Intangibles data sonification working group, with whom I workshopped the question: how can we as artists and scientists solve the incompatibility between quantum mechanics and general relativity through live musical performance?

Reqs: Screen & speakers

Beyond the Frame: Rethinking Visual Storytelling in Art–Science Collaboration (Invited)

Authors

Max Alexander (1)

(1) Max Alexander Photography

Abstract

Photographer and creative strategist Max Alexander uses visual storytelling to communicate complex scientific ideas to global audiences. His practice spans the full lifecycle of projects, from ideation and fundraising to content creation, delivery, and long-term engagement. Collaboration is central, working across disciplines with scientists, institutions, and creative partners, including a sustained partnership with an astronomy professor over two decades.

Through projects such as Our Fragile Space, he explores how narrative and imagery can humanise science, build emotional connection, and engage new audiences. His work is outcome-driven, designed not only to communicate but to influence dialogue and institutional thinking, particularly around space sustainability and the protection of the night sky. This talk reflects on process, collaboration, and the role of visual storytelling in shaping how we understand and act on scientific challenges.

First Contact: Artistic Responses to the Harvard Plate Stacks

Authors

Julie F Hill (1)

(1) Independent artist/practice based researcher. Artistic collaboration with Harvard Plate Stacks, funded by ACE DYCP. www.juliefhill.co.uk / @juliefhill

Abstract

Julie F Hill's practice is concerned with how photographic forms of astronomical data often constitute our first point of contact with outer space – and in the case of the Harvard Plate Stacks, how the women 'computers' were often the first to have physical contact with the data. Following a year-long period of research I foreground the intimacy, attention and care embedded in the working methods of the women computers to ask what female-led and non-human perspectives might contribute to more responsible practices of ecological care in outer space – questions that feel especially urgent given the increasing use and reliance on AI as well as the rapid expansion of human activity in outer space.

I will outline research and works being made in response to the collection. One work currently in development focuses on the historical importance of Harvard's spectra plates including 'A Monument to Spectra' – a large-scale silverwork embroidery that pays homage to the work of the women at Harvard – notably Williamina Fleming, Antonia Maury, Annie Jump Cannon and Cecilia Payne Gaposchkin amongst many others, who contributed to photographic spectroscopy during the late 1800s to the mid 1900s. Their work was foundational for understanding stellar temperature, evolution and composition, the legacy of which continues to inform contemporary science. Spectra of stars will be translated into silverwork embroidery, a technique prized for its interaction with light. Drawing on the material history of analogue photography where silver salts were essential to recording astronomical observations, the work explores embroidery as both a material and conceptual analogue to the women's labour of classification, attention and care. I will extend ideas for community participation via samplers, workshops and community outreach events that harness embroidery's power to share stories and histories of women in science.

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The Pragmatic Demonstration of the Consilience model in Community Science Engagement (Invited)

Authors

Mr Nic Smith MSc (1), Dr Jeremy Ellis (1)

(1) Redditch Astronomical Society

Abstract

Astronomy outreach often relies on analytical and explanatory formats that can limit creative engagement with its scale, abstraction, and the complexity of astronomical data. Responding to this challenge, we present a practical application of the consilience (ArtScience) model, demonstrating how the arts can function as a boundary object (after Susan Leigh Star) to enable collaboration across disciplinary and public contexts. In this model, shared artefacts support the negotiation of meaning between participants with different expertise, motivations, and knowledge.

We report on three iterative community-based case studies delivered by Redditch Astronomical Society, each reflecting increasing levels of integration and aligning with key themes in ArtScience practice. The first adopts an audience-development approach, using visual art, film (*Interstellar*), poetry, and music to create accessible entry points for diverse and intergenerational audiences, highlighting the role of STEAM-oriented formats in inclusive engagement. The second, developed in partnership with a civic initiative (Reimagine Redditch), combines a planetarium experience with artistic and poetic responses, demonstrating how immersive visualisation and interdisciplinary tools can support public engagement with complex scientific ideas. The third, a fully integrated event hosted in a public library, brings together a science-fiction author and a visual artist, to enable dialogue.

Across these cases, we identify: (i) conditions for effective ArtScience collaboration, including the role of flexible boundary objects in sustaining interdisciplinary exchange; (ii) the value of visual, immersive, and narrative approaches in communicating scale, uncertainty, and abstraction in astronomy; and (iii) the contribution of multi-modal formats to accessibility, inclusivity, and diverse learning practices. We conclude with transferable recommendations for designing and sustaining community outreach events to promote the engagement with Astronomy at a local level.

Gravitational Waves, in and out of Pools (Invited)

Authors

Leon Trimble (1)

(1) University of Birmingham

Abstract

Art science is a field where oftentimes, data is abstracted and perhaps sonified in a musical piece or otherwise made to fit a medium where it will sound or look wondrous or pretty. If however the art form is to be performed live with scientific equipment, e.g. an interferometer making sound thru a modular synthesiser, things can be qualitatively challenging. This is exactly where the Gravity Synth has been successful at navigating space and time in terms of public performance. This presentation will explore exactly what has been achieved in terms of what the public has learnt about LIGO and gravitational wave detection and how this was achieved by developing the methods of musical performance with the help of Astrophysicists, swimming pools, auditoriums and surround sound. It will give musical examples and a short performance and talk about how it can translate into a practice based PhD on Time & Space.

From Coffee Shops to the Cosmos: A Lived Experience Perspective on Access to Astronomy

Authors

Tibby Finn Leeming (1)

(1) University of East Anglia

Abstract

This contribution considers the perception that careers in astronomy and astrophysics are only attainable via linear, highly structured academic pathways. The author offers her lived experience perspective on access to astronomy, alongside reflections on the structural and cultural factors that influence participation in the field.

The author describes her own non-traditional educational trajectory into astronomy, beginning with unsuccessful progression through A-Levels, followed by the swapping of academic pursuit for a hospitality one, to then re-engaging with academia via an Access to Higher Education course and finally, the completion of an undergraduate degree. The author's five-year-long experience at university—which included a placement year in industry and an integrated Masters—ultimately facilitated her current position in a doctoral studentship. As a recent awardee of the Bell-Burnell Graduate Scholarship Fund for underrepresented groups in physics, the author discusses how financial, structural, and opportunity-related barriers shaped her extended pathway, rather than linear academic progression.

Alongside this personal narrative, the author discusses strategies that contributed to her development and sustained engagement with astronomy outside formal education. These include self-directed, interest-led learning through popular science literature, engagement with open educational resources, and continued support from mentorship and peer networks developed during and after her formal studies. The author acknowledges a persistent disconnect between initial enthusiasm for astronomy and access to the educational structures and opportunities needed to develop that interest into formal understanding.

The author emphasises that sentiments surrounding access to astronomy, and other STEM subjects, hosts very traditional educational narratives entrenched in assumptions of linear progression, early specialisation, and the association of success with so-called elite institutions and high-stakes assessment. Additionally, conventional teaching styles in mathematics and physics can unintentionally exclude capable learners, particularly those with non-curricula interests, or those who require alternative modes of engagement to thrive. These limitations do not affect all learners equally and are likely to have a disproportionate impact on individuals from underrepresented or disadvantaged backgrounds.

Overall, this contribution proposes that broadening participation in astronomy requires rethinking how access, ability, and progression are conceptualised. In doing so, institutions can improve accessibility for learners with alternative educational backgrounds who may have limited academic fluency. The author advocates for flexible, enquiry-led learning opportunities, interaction with extracurricular resources, and reduce reliance on didactic, rote-based instruction, thereby enabling a wider range of perspectives to contribute to astronomy.

This is not for you: Access to Astronomy Reimagined

Authors

Dan Pye (1)

(1) Kielder Observatory

Abstract

I am not an astronomer in the traditional sense, and I did not follow a conventional academic pathway beyond A-level. I am, however, the Director of Astronomy and Science Communication (Deputy CEO) at Kielder Observatory, one of the UK's leading centres for immersive, live astronomy engagement. How did I get here?

This talk reflects on my non-linear route into astronomy and science communication, and how that journey now informs my work today.

As a teenager, I was discouraged from pursuing science-based careers due to my academic performance and was unaware that astronomy was a viable pathway. In my “backup” career, I was similarly told that broadcasting and voice acting were unrealistic ambitions. My career instead developed across media studies, theatre, radio advertising, live events, themed hospitality, and eventually professional voiceover work spanning commercials, television, continuity announcing, and video games.

At the time, these experiences appeared disconnected from science. In retrospect, they provided the foundation for my approach to public engagement: storytelling, performance, emotional pacing, environment design, and audience awareness. Following a period of business failure and personal difficulty, I reconnected with astronomy through Kielder Observatory, initially as a visitor and volunteer, learning through practice rather than formal academic training.

This experiential route into astronomy has since shaped my leadership in developing large-scale public engagement programmes, immersive experiences, and educational initiatives across multiple sites. Central to this work is the principle that people do not disengage from science solely because it is difficult, but because it is often presented in ways that do not align with how they learn.

By sharing this perspective, I will outline practical approaches drawn from my work at Kielder, including how performance, storytelling, and experience-led delivery can make science feel more accessible. These approaches are designed to reduce the barriers people often feel when engaging with science, and to help audiences connect with it in a way that feels natural, enjoyable, and within reach.

I wasn't bad at science. I just hadn't been invited in the way that suited me. Now it's my goal to open that invitation for others.

Posters

Interdisciplinary approaches to teaching and public engagement: Animation and Physics working together.

Authors

Ian Whittaker (1), Robert Szczerba (1)

(1) Nottingham Trent University

Abstract

As academics our specialty tends to be in a niche area of our overall disciplines. A strong example of this is a knowledge of scholarship, space weather, and radiation belt dynamics but only being able to draw stick people at best. Interdisciplinarity is a major support to us by filling in the gaps that we are weakest at.

This talk describes a collaboration between the departments of Physics and Animation which has been running since 2021. This involves a physics academic becoming a sample client for level 5 undergraduate students to produce an animation based on space science concepts and/or history. These animations are then used for both undergraduate teaching and public outreach.

These animations will be shown with links to allow others to use these resources as well. We also show how it benefits students in both disciplines and provides a sustainable method of delivering physics concepts.

Bringing Exoplanet Research to Art Venues

Authors

Amaury Triaud (1)

(1) University of Birmingham

Abstract

Most research papers remove the human from the research. However, the hope of discovering an important clue to a physical process is subjective behaviour. Meanwhile, the public is fascinated by new discoveries but does not always have the language to understand them. In both instances, Art is an effective medium. For researchers Art can help to convey their motivation. For the public Art can help them appreciate that Science too is a creative process, as well as a valuable component of our society's culture. In addition, artistic practice can help inform scientific practice. In this talk I will describe a number of collaborations done with artists across the years, which culminated this year with the creation of a full-feature animated movie (for planetarium) and of a major exhibition at the Royal West of England Academy.

Exploring the Universe through science, sound, story-telling and digital art

Authors

Rose Shepherd (1), Chris Harrison (1), James Trayford (2), Nicolas Bonne (2), George Caselton (1), Sam Youles (2), Rachel Lambert, Tommy Howell

(1) Newcastle University

(2) University of Portsmouth

Abstract

Our interdisciplinary project involves astronomers, musicians, digital artists, special educational needs (SEN) education specialists, and students to bring the Universe to life through multiple senses. For example, within our Audio Universe team, we have been performing research on the effectiveness of using different sound designs to represent astronomical data, such as stellar light curves. These sounds were designed with different perspectives in mind: e.g., viewing the “twinkle” of the stars in the sky, the “nuclear” power of a star viewed close up, and a “sci-fi” experience. We will present our results of how effective these different sound designs were for communicating key information and creating an enjoyable experience with family audiences. Secondly, we will present our latest work combining story-telling, digital art, musical sound design, and astrophysics knowledge to produce an audio-visual show about black holes. Again, rigorous audience testing is helping guide the show’s design to both communicate information and create an immersive experience. Through this show we will tell the story of a misunderstood black hole that wants everyone to know that it doesn't suck - it's very gravitationally attractive!

Solar Tree – A Collaborative Interdisciplinary Journey (Invited)

Authors

Pauline Woolley (1)

(1) Artist

Abstract

In 2022, my image Solar Tree was awarded the Astronomer Photographer of the Year Annie Maunder Image Innovation Prize at the Royal Observatory Greenwich. The work, inspired by the interplay between Carbon-14 levels and solar activity as recorded in tree-ring data, was created using imagery from the Solar Dynamics Observatory (SDO).

Through online science publicity Solar Tree caught the attention of the Laboratory of Tree-Ring Research (LTRR) at the University of Arizona, founded by astronomer and dendrochronology pioneer A. E. Douglass in 1937. This recognition led to collaborative conversations with geoarchaeologist and dendrochronologist Dr. Charlotte Pearson, opening new art avenues at the intersection of solar physics, dendrochronology, and the historical legacy of Douglass.

In 2025, I was awarded an Agnese N. Haury Visiting Scholar Fellowship to work at LTRR under the supervision of Dr. Charlotte Pearson and Dr. Peter Brewer. During this fellowship, I had the privilege of engaging deeply with Douglass's late 19th and early 20th-century glass plate archive, a remarkable collection documenting astronomical observations, sunspot cycles, and tree-ring data.

This talk will explore the creation of Solar Tree as its journey evolves into a collaborative, interdisciplinary project bridging art, astronomy, and dendrochronology. I will also present the work in progress from my project The Scientist and the Artist, born from the fellowship, which connects historical scientific data with my contemporary visual art practices. Finally, I will reflect on the challenges and insights gained through these collaborative endeavours, highlighting how partnerships across disciplines can inspire new ways of seeing both science and art.

Interdisciplinary perspectives, contemporary arts practice and the curation of 'Cosmos: The Art of Observing Space' (Invited)

Authors

Ione Parkin RWA (1)

(1) Honorary Visiting Fellow, School of Physics and Astronomy, University of Leicester

Abstract

Ione Parkin RWA is an artist and the curator of the exhibition 'Cosmos: The Art of Observing Space' held recently at the Royal West of England Academy (RWA), Bristol, touring to Aberdeen Art Gallery (November 2026-April 2027). Parkin convened the Cosmos Symposium at the Royal Astronomical Society in February 2026.

Parkin will discuss the artworks, themes and scope of the 'Cosmos' exhibition, which was delivered in partnership with the RAS. The exhibition brings together a body of work by over 30 contemporary artists inspired by themes of astronomy, cosmology, astrophysics, planetary science, meteorites, solar dynamics and celestial mechanics. The exhibition provides a balance between artists who have engaged closely with science data, alongside artists whose work is more subjective and intuitive. Contemporary artwork is displayed alongside historical items loaned by public collections. The RWA delivered a programme of public engagement events and workshops.

Parkin will share insights into her own contemporary arts practice, recent work and her dialogue with space scientists. Her work is informed by on-going dialogue with space researchers over a 10 year period, as co-founder/lead artist of the Creativity and Curiosity project (www.creativityandcuriosity.com).

Biography:

Ione Parkin RWA is a painter, printmaker and the curator of 'Cosmos: The Art of Observing Space'. She is an Honorary Visiting Fellow of the School of Physics and Astronomy, University of Leicester; a Research Collaborator, University of Bristol; and a Royal West of England Academician. Parkin co-leads the art-astronomy project, Creativity and Curiosity (C&C). She has co-curated C&C exhibitions in Berlin, Glasgow, Birmingham, Leicester and the Isle of Lewis and contributed to interdisciplinary conferences in the UK, Germany, Spain and the Netherlands. She delivered the John Brown Memorial Lecture at the RAS in 2024. Parkin trained at Winchester School of Art and has exhibited nationally and internationally and her work is included in numerous private, corporate and public collections.

<https://ioneparkin.com/about>

Blending Science into 3D Visualisations

Authors

Soheb Mandhai (1)

(1) The University of Manchester

Abstract

In this presentation, I'll be presenting methods that can be employed to improve the engagement of research items using free, open-source software such as Blender. I will demonstrate its capabilities as a tool that works in tandem with astrophysical data as well as presenting visualisations that I have created for press releases. The aim of this talk is to inform and expand horizons of what is capable with a blend of python and artistic intuition.

From Stardust to Story: Poetry, Manga, and the Art of Making Science Feel Human (Online)

Authors

Sreenandan K J (1)

(1) St Berchmans college, Kerala, India

Abstract

Science communication has long relied on data, diagrams, and formal language tools that inform but do not always move people. Yet some of the most profound encounters with the cosmos happen not in lecture halls but in a verse that captures the loneliness of a pulsar, or a manga panel where a teenage protagonist glimpses the event horizon of a black hole for the first time.

This contribution examines how abstract and narrative art forms poetry, graphic storytelling, and theatrical performance function not merely as outreach instruments but as legitimate epistemic tools: ways of constructing, negotiating, and transmitting scientific meaning across cultural and disciplinary boundaries. In an era where public trust in science is contested and attention is fragmented, these forms offer something data visualisation alone cannot narrative tension, emotional resonance, and the radical accessibility of story. Poetry, with its structural tolerance for ambiguity and compression of meaning, mirrors the phenomenology of scientific inquiry itself: dwelling in uncertainty, finding pattern at the edge of the knowable. When applied to astronomy to the lifecycle of stars, to the silence between galaxies, to the philosophical weight of deep time verse becomes a boundary object in the truest sense, carrying scientific content across audiences without flattening its complexity.

Manga and sequential graphic art present a parallel and underexplored case. With their global reach, visual grammar, and embedded cultural legitimacy across generations of readers particularly in non-Western contexts they offer a medium through which particle physics, cosmology, and quantum phenomena have already begun to find serious creative expression. These are not simplifications. They are reframings that demand their own intellectual rigour.

Theatre, too, holds particular potential in physics communication where abstract entities such as bosons, fields, and vacuum states resist conventional visualisation entirely. A dramatised encounter with particle physics does not explain the Standard Model; it makes the audience feel the strangeness of it, which may be a more durable form of scientific engagement.

This contribution calls for a more intentional integration of these art forms into astronomical outreach and STEAM practice not as supplementary decoration, but as structurally distinct modes of knowing that can expand who science speaks to, and how deeply it lands.

Emerging practices in Art and Science using AI (Invited)

Authors

Liz Dowthwaite (1)

(1) University of Nottingham

Abstract

I was the PI of the Responsible AI UK (RAi UK) funded project “ARTificial Intelligence: Show Me a Story about AI”, an 18-month project aiming to understand how AI can be used responsibly in the creative process of visual artists. As a multi-disciplinary project we engaged in philosophical, conceptual, and empirical (quantitative, qualitative, mixed, values-based) analysis. We also engaged with the creative industries by involving 4 partners working within this field, and worked deeply with 3 artists through commissioned works and public events exploring the narratives of academic and creative communities around the responsible use of AI in the visual arts. This research was guided through our 3 research questions (RQ): What stories do academic and creative communities, focusing on visual art, tell about AI and what values underpin these narratives? How do creative communities understand responsibility in the use of AI in visual art? How can understanding the values and responsibility factors in narratives about AI create opportunities for novel forms of art and creativity?

In addition, I have worked for many years in the field of citizen science, where the use of AI techniques (such as machine learning, natural language processing, and computer vision) are not new but due to the explosion in Generative AI capability is increasing rapidly and into new areas of the research process. Whilst this can improve the scientific process, it is important to understand the limitations of the use of these techniques, as well as consider the impact on how scientists and volunteers understand their role in participatory science. The study asked 4 RQs: What are the opportunities and drawbacks of using AI techniques? What does it mean to be responsible, ethical, and trustworthy? How does the use of AI affect volunteers, and how can we ensure they remain engaged and understand their vital role in research? How does the participatory science community think the use of AI should be advanced?

Across disciplines, the use of AI must be responsible, ethical, and trustworthy. However, it is not always clear what this means and how it can be applied.

In this talk I will combine insights from both projects to discuss i) what it means to be responsible in the use of AI in science and art ii) the intersection between art and science when it comes to the use of AI, iii) how AI can ethically be used to advance both fields as well as promote collaboration, and iv) the benefits of engaging with artists in research and the use of art and creativity as a research method.

Gravitational waves as you never straw them before: from harvest-time to space-time!

Authors

Hannah Middleton (1)

(1) University of Birmingham

Abstract

Straw working and corn dolly making are traditional crafts in which straw is used to create decorative and/or symbolic items, often associated with historic harvest traditions in rural communities. In recent times, these crafts have slowly been dying out and they are recognised as endangered by the UK Heritage Craft Association. Several efforts are underway to encourage more people to take up straw craft and corn dolly making. Here we combine this ancient craft with gravitational-wave visualisation to produce a three-dimensional straw representation of gravitational-waves!

A high schooler's attempt to analyse the link between British arts/popular culture and astrophysics. (Invited) (Online)

Authors

Emile Zana (1)

(1) Maurice Ravel High School

Abstract

I have been working, for the past two years, on a project analysing the relationship between arts and astrophysics for a final examination at my school.

The parts of my presentation I enjoyed working on the most were the ones concerning pieces of art and popular culture integrating astrophysical concepts at different levels, and my attempt to compare astrophysics to poetry.

During my research, I identified various degrees of integration of astrophysical and astronomical concepts into arts and popular culture, which allowed me to arrange multiple pieces into a few categories :

1. Expression of scientific concepts to ease comprehension, crucially without oversimplifying them, so as not to lose any information when passing it on to the observer.
2. Dedication of a particular piece to one or two astrophysical subjects, clear attempt to be rigorous without overly limiting the freedom of the artist.
3. Clear astrophysical/astronomical reference without an attempt to be rigorous or to pass on knowledge.
4. Use of astrophysical/astronomical ideas simply as a medium to transmit a message, or to evoke beauty.

This shows that astrophysics are inspiring enough for artists to dedicate their works to it, with various levels of commitment.

This instilled within me an idea which, after even the shortest of searches, I found a great number of people share, that being the fact that art and astrophysics exist in a sort of cycle. Art inspires itself with astrophysics, imagining beyond the realm of reality. In turn, this encourages scientists to render possible what artists imagine, causing artists to invent even further.

This brought up the question wondering if, since astrophysics clearly greatly inspires art, the opposite could be true. And if so, in what ways do arts influence science by imagining beyond reality?

The most obvious instance of art influencing astrophysics is its way of enticing people to pursue a career in the field. From "Star Trek" simply giving a purely recreational depiction of what space travel would look like, to the complex art of astrophotography sharing the beauty of the heavens in a very effective way, arts do in fact matter a lot when it comes to influencing some to choose a particular field of work. Taking as an example the 2022 survey by Elizabeth Stanway, we can see that among the 239 astrophysicists she interviewed, 93% were interested in science-fiction and 64% had their career influenced by it.

Finally, one of the most important parts in my presentation was my conclusion, stating that to me, astrophysics is, itself, art. Science is but another way of expressing a vision of the surrounding universe, it being rigorous but not restrictive renders it as free as literature or cinema.

I feel as though astrophysicists are simply a group of writers debating on how to write the most important of stories : that of a universe that doesn't have to make sense to anyone, and that separating science and art can only devalue both of them.

Exploring the Use of Science Fiction in Astronomical Outreach

Authors

Elizabeth Stanway (1)

(1) Warwick

Abstract

Science and Science Fiction have matured in parallel over the last century or more. As they have done so, scientists, the media and the general public have all reached for science fiction when seeking to interpret or understand cutting edge scientific results. Narratives reflect societal concerns about the use of science, as well as offering non-threatening scenarios in which to contextualise complex scientific ideas. In this poster I will reflect on recent work to explore the connection between science fiction and professional astrophysics. I will also seek to build on my successful experiment at NAM 2022 by dedicating half the poster to an interactive survey, asking the NAM community to reflect on their personal positioning with regard to the use of science fiction in science communication and their experiences of so doing.

Art in Space Exploration: Why this Essential Quality of Humanity Must Follow Us into Space (Invited)

Authors

Lisa Pettibone (1)

(1) Artist

Abstract

As humans venture deeper into space to study the universe and live off planet, the creative arts should naturally accompany voyagers. Both artists and scientists need a rationale to support the early integration of creative thinking into projects and missions that develop all aspects of humanity. Technology ensures we can travel and survive in space but the expressive arts ensure that our emotional selves and the social implications of space travel are accounted for.

This presentation explains why this is historically important and gives clear examples of collaborative relationships with industry that have resulted in projects that touch on all aspects of what it is to be human. Artist Lisa Pettibone has experienced this first hand through three space-based artworks and is researching an approach that validates the presence of the creative arts in space. She examines references to the human relationship with the cosmos since ancient times, as revealed in neolithic monuments and archaeological objects. Roman finds in the UK show that cultural artefacts have always been part of human exploration. Art destined for space (created since 1969) has continued the habit of rooting culture in new landscapes.

Through examples of three space-based projects, she explains how art/science associations are possible and valuable to both parties. Artist in residence at Mullard Space Science in 2019, she later produced a collaborative art plaque for the Euclid Mission telescope launched in 2023. Working with the Moon Gallery Foundation, her work was included in the first gallery in space in 2022, onboard the International Space Station for 11 months. Also with the Moon Gallery, her poem appears in the tiny one centimetre-square book titled Moon Bound being sent to the Moon later this year.

Art in the context of space exploration operates as a fulcrum to probe social issues and personal experiences as people process the meaning of both life on Earth and the human destiny in the universe. Importantly, it brings much needed perspective to the exciting journeys that lie ahead.

Initial Visual Ideas in High-Energy Gamma-ray Astrophysics Communication and Outreach

Authors

Stefano Ciprini (1)

(1) (1) National Institute for Nuclear Physics (INFN) Section Roma Tor Vergata - (2) Space Science Data Center (SSDC) of Italian Space Agency (ASI) , Rome Italy

Abstract

In the era of Big Data astronomy, the bridge between complex phenomena in high-energy, all-sky survey, and transients astrophysics, and the public communication, can be usefully built also thinking to new ways and ideas for data visualization, graphic design and science illustration. In Education and Public Outreach (E&PO), visualizations and graphical design can serve both a engagement and essential cognitive support for the public. A few initial and preliminary examples and proposals are here reported. A potential new professional figure of visual astrophysicist, both a graphic artistic designer and illustrator with a keen eye for data-driven artistry, creative graphics and rendering, and a research scientists, could emerge.

QTechEdu: An Interactive Learning Environment for Quantum Physics with Applications in Astronomy and Beyond

Authors

Mehdi Adrien Ayouz (1), Mariya Sosnova (1), Michal Pawelkiewicz (1), Marino Marsi (2), Viatcheslav Kokoouline (3)

(1) CentraleSupélec

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Abstract

Astronomy, geophysics, and space science place high demands on physics and mathematics, which can be challenging for many students. To address these barriers, we present a pedagogical approach aimed at enhancing learning in quantum physics through the active use of interactive information technology tools.

Our teaching framework is structured in two stages. The first stage (licence/bachelor level) develops a solid understanding of fundamental quantum physics concepts. The second stage (master level) emphasizes applications of quantum phenomena in modern technologies and scientific domains, allowing students to connect theory with practical uses.

Within this framework, we developed QTechEdu, an interactive learning environment focused primarily on quantum physics, with modules that demonstrate applications across scientific fields, including astronomy. Implemented using Python, Jupyter Notebook, and web technologies, the platform enables students to perform simulations, visualize phenomena, and explore calculations interactively.

Current modules include Module 1: Trace Gas Detection, covering photoionization cross sections, and Module 2: Rotational–Vibrational Spectroscopy of Molecules. Two additional modules are currently under development: one dedicated to scattering processes, and another introducing dimensionality reduction techniques, in particular Principal Component Analysis (PCA), applied to the analysis of Cosmic Microwave Background (CMB) data.

Together, these modules illustrate key quantum concepts and data analysis methods applied to real-world scientific problems. They help students connect theoretical foundations with practical applications, particularly in astronomy, astrophysics, and related scientific fields.

While QTechEdu is broadly applicable to quantum physics education, it emphasizes concrete scientific applications. The platform provides interactive pathways for non-linear exploration, fostering engagement and supporting diverse learning styles.