Diversity and Decolonisation in Mathematics and its Applications

Thursday 7th - Friday 8th May 2026
Warwick Mathematics Institute
University of Warwick

supported by Warwick Inclusive Education Fund and the Mathematics Research Centre

Location

Venue information

Warwick Maths Institute, Zeeman Building, University of Warwick

There are virtual tours of the building and the rooms we will be using on the "Venue" page of our website.

To avoid confusion, please be aware that there is a *different* building called the Mathematical Sciences Building. The Zeeman building is 100m/150yards away. If you are facing the entrance to MSB, turn right and then walk along the length of the lake.

Campus Community Safety Hub (Campus Security):

024 7652 2083

Transport

Car Parking:

- There are a number of paid car parks available for visitors on campus - instructions here. The nearest is Lynchgate Car Park (P5), along with Car Park 15 (P4) and Car Park 8 (P3).

Public Transport:

- Zeeman Building is a 30 min walk from **Canley train station**.
- Buses run frequently from **Coventry train station** to the University Bus Interchange. The 12X departs from Rail Station Bridge Stop WR6.
- Zeeman Building is a 10 min walk across campus from the University Bus Interchange.

On the day(s)

Local Organising Committee

Siri Chongchitnan, Jonathan Skipp, Helena Verrill, Elliot Vincent

Facilities

- Toilets are available on every floor of the building (gender neutral toilets on floors 0-2).
- Water fountains are available on floors 0-2.
- We have a “Wellbeing Quiet Room” on the ground floor of the building which you will be welcome to use. Please approach the organisers and we will direct you here. If you would like to be shown where it is at the beginning of the conference, please also approach us.

Food

- There is a conference dinner planned for 6:30pm Thursday 7th May, which will cost £20, to be paid at the registration desk.
- Please be aware that due to funding limitations and in order to keep the conference free to attend, **lunches will not be provided**. There are a number of eateries on the Warwick campus (Pret, Cafe Nero, as well as University-run cafes), and a shopping centre (Tesco, Greggs) within a 5 min walk of the Zeeman Building. Organisers will be happy to lead people there on the day.
- If you have dietary requirements and are concerned about access to food, please feel free to get in touch with the organiser team.

Schedule

Thursday 7th May

Time	Programme	Venue
9:45-10:15	Registration	Common room
10:15-10:30	Welcome Overview of Inclusive Education Efforts at Warwick Student-led Decolonisation at Warwick	MS.03
10:30-11:20	*Plenary: EDI times AI Equals?* Nira Chamberlain, AtkinsRéalis	
11:20-11:30	Short break	
11:30-12:20	*Plenary: Co-Developing Responsible AI With People, For People* Alina Patelli, Aston University	
12:20-13:30	Conference Photo & Lunch	Photo: outside MS.02
13:30-14:10	*African Insitutes for Mathematical Sciences* Jane Hutton, University of Warwick	MS.04
	Diversifying and decolonising mathematics with the students - examples of student-led projects Stefania Lisai, University of St Andrews	
14:10-15:00	*Plenary: History for Inclusion & Diversity in Mathematics* Isobel Falconer, University of St Andrews	

Schedule

Thursday 7th May (ctd)

Time	Programme	Venue
15:00-15:30	Tea & Coffee	Common room
15:30-16:30	*Beyond the Textbook: Decolonising Algebra through Historical Knowledge, EDI and Relational Learning* Holly Heshmati, University of Warwick	MS.05
	'Beyond the Formula': Empowering students through co-creation of inclusive mathematics curricula Rehan Shah, Queen Mary University of London	
	From Ancient Egypt to Decolonising the History of Mathematics Curriculum Marsia Bealby, University of Warwick	
16:30	Drinks Reception	Common room
from 18:30	Buffet Dinner	Radcliffe

Schedule

Friday 8th May

Time	Programme	Venue
10:00-10:50	*Plenary: Abstraction for real people* Tim Hosgood, Topos Institute	MS.02
10:50-11:20	Tea & Coffee	Common room
11:20-12:20	*Addressing presentation anxiety in undergraduate maths students* Elliot Vincent, University of Warwick	MS.02
	Reading Time in Exams: Support for English Language Learner Martyn Parker, University of Warwick	
	The knock-on effect of socioeconomic attainment gaps in mathematics Katie Berlin, University of Warwick	
12:20-13:30	Lunch	
13:30-13:50	*How to avoid the recolonisation of the curriculum* Catarina Carvalho, University of Hertfordshire	IAS conference room
13:50-15:00	*Plenary workshop: Decolonisation Workshop* Genovefa Kefalidou, University of Leicester	
15:00-15:30	Tea & Coffee	Common room

Schedule

Friday 8th May (ctd)

Time	Programme	Venue
15:30-17:00	*Algebra in Context* Nicholas Jackson, University of Warwick	MS.02
	Research Your Way - a case study Kat Phillips, University of Warwick	
	What can you do? A Piscopia Initiative Resource Ashleigh Ratcliffe, University of Leicester	
	Matemáticas en español, ¿por qué no? Alvaro Gonzalez Hernandez, University of Warwick	

Plenary

Thursday 7th May

EDI times AI Equals?

Nira Chamberlain, AtkinsRéalis

Can we treat EDI as a Science Problem?
Can we use maths to stop an AI Apocalypse?
What is the modern day overlap of these two topics?

Co-Developing Responsible AI With People, For People

Alina Patelli, Aston University

Responsible AI is a tech driver of sustainable economic growth that protects democratic liberties. The systematic design, implementation, and deployment of AI for good are demanding tasks, given the diversity of those impacted. Engaging a representative sample of AI's heterogeneous user base to gauge the benefits it expects requires innovative participatory activities interspersed throughout the stages of the AI development process. Translating stakeholder input from the jargon-free vocabulary in which it is collected to coherent, comprehensive, industry-standard artefacts that experts can use to build responsible AI in practice is also challenging. Developing a robust assessment framework with objective metrics for evaluating intelligent tech adds to the overall difficulty. To address these issues, I propose a novel, systematic, participatory approach to co-designing and co-assessing responsible AI. I apply the approach to architect an AI recommender system that supports transport authorities, industry, policymakers, and the public with their urban mobility decisions. The system features complementary tech from across the AI spectrum and includes an evaluation framework with robust architecture assessment metrics.

History for Inclusion & Diversity in Mathematics

Isobel Falconer, University of St Andrews

Addressing Equality, Diversity and Inclusion (EDI) in the curriculum is a widespread concern in the mathematics education community, often aligning with calls for decolonisation of curricula. However, it is seldom clear how to teach mathematics in a way that addresses EDI, let alone improves inclusion. Careful use of History of Mathematics (HoM) within mainstream mathematics teaching is often proposed as one way of promoting EDI. However, the interacting factors in doing so effectively are not yet understood, and staff lack confidence in using it.

For the past three years the History for Inclusion & Diversity in Mathematics (HIDIM) network has been supporting HE educators in exploring whether and how HoM can be used effectively for EDI within Mathematics. In this talk I will share our experience and what we have learnt through HIDIM activities and projects, and how we hope to develop the network going forward.

The responsibilities of decontextualisers

Tim Hosgood, Topos Institute

As C. Thi Nguyen writes, "the power of data is vast scalability; the price is context". Data is just one of the many outcomes of the process of abstraction, and there are two other names that I will use for this process: "mathematics" and "decontextualisation". Whatever you call it, the process of abstraction directly shapes technologies, and technologies directly shape the lives of the people who use them (and even those who don't). Colonial systems of power are a large reason for the harm caused by insensitive technologies, and we must acknowledge how deeply this runs: the very means of the production and distribution of knowledge are themselves constricted by these systems. As mathematicians, "stewards of abstraction", we should confront our responsibilities and embrace the opportunities afforded to us by our subject.

In this talk I will look towards a positive future of democratized intersectional science.

Workshop on Decolonisation in Mathematical Sciences

Genovefa Kefalidou, University of Leicester

This hands-on workshop will explore and unpack what decolonisation involves in Mathematical Sciences by utilising toolkits and knowledge transferred from affiliating domains such as Computing, and prior related funded projects such as UKRI-funded Trustworthy Autonomous Systems (TAS) Hub, UKRI-funded TAS Verifiability Node as well as the CPHC-funded project on Decolonising Computing on which I have been a Co-Investigator. We will tap upon aspects of Mathematics role models, non-European origins of Maths, recontextualising problems and inclusive language and assessment.

We will also look into AI decolonisation and how this could be relevant to Mathematical Sciences, particularly considering the "Black-Box Problem", algorithmic biases and designing ethical AI tools for Maths. My approach is user-centric, driven by my expertise in Human-AI Interaction and User-Centred Design.

The workshop will be fully participatory and interactive.

African Institutes for Mathematical Sciences – Experiences and opportunities for statistics and mathematics capacity building in Africa

Jane Hutton, University of Warwick

The African Institute of Maths Sciences (AIMS) has contributed substantially to empowering African mathematicians. This talk aims to encourage more mathematicians to contribute by offering essays, courses or time as resident tutors.

AIMS offers postgraduate training, research, and public engagement programs for African students in STEM fields to support the continent's development. The main AIMS programmes run by the centres in are one year courses, which aim to prepare African graduates with mathematically-based degrees for further post-graduate study or mathematics teaching.

Students at AIMS are selected from many African countries, and women are least a third of each cohort. Students have often struggled to get an education in countries where only primary education is mandatory. They are often older than UK graduates, leave families behind, and try to save their allowances to send home. Motivation and commitment is high. The five centres: Cameroon, Ghana, Rwanda, Seneghal, South Africa, are residential. As women are often expected, in Africa, not to go out after dark, freedom to study in residence is appreciated.

All courses are taught by visiting lecturers, often major international figures, with volunteers from Africa, Asia, Europe and North America. Lecture courses consist of 30 hours contact time (10 per week), about 15 to 18 hours lecturing and 12 to 15 hours for tutorial work. Tutors assist with tutorials and do the marking. I have worked with Zimbabwean, Ethiopian, British, Kenyan and Ghanaian tutors. I am also helping an International Statistical and Epidemiological Partnership to co-ordinate with AIMS for mutual benefit.

Diversifying and decolonising mathematics with the students - examples of student-led projects

Stefania Lisai, University of St Andrews

My interest in decolonisation and diversity in mathematics started when I first worked as a tutor in AIMS Ghana in 2019, during my PhD. When I started my first position as a lecturer, I wanted to focus my research on these themes but I found myself completely absorbed by my teaching duties and had no idea where to start. Luckily, my students led the way.

Over the last three years I supervised various types of projects on topics from decolonisation to neurodivergence accessibility to sense of belonging of LGBTQIA+ students in STEM. In most cases, the projects were proposed directly by the students.

After an overview of the projects that my students worked on, I will discuss the challenges that we encountered as well as the positive outcomes.

Beyond the Textbook: Decolonising Algebra through Historical Knowledge, EDI and Relational Learning

Holly Heshmati, University of Warwick

This presentation shares a case study from a secondary Mathematics PGCE programme in which historical perspectives are used to support more inclusive and conceptually rich approaches to teaching algebra. It focuses on how engaging with the development of mathematical ideas can strengthen both subject knowledge and classroom practice. Rather than relying on tokenistic references to 'diverse mathematicians', the session supports pre-service teachers to examine how mathematical knowledge has been produced, transmitted and shaped across different contexts. Using algebra as a key example, participants explore how methods for solving equations have developed over time through processes of translation, adaptation and use. A central feature of the session is a structured reflective task in which pre-service teachers select a topic, identify its core concepts, and investigate how this knowledge was developed and by whom. They then consider how this understanding can inform their teaching, for example, by connecting procedures such as solving linear equations to their underlying purposes and development. This approach supports a shift from procedural teaching towards relational understanding, enabling pre-service teachers to present mathematics as a connected and meaningful discipline. Feedback indicates that participants develop more thoughtful and inclusive approaches, alongside stronger conceptual explanations. This presentation demonstrates how integrating historical knowledge into algebra teaching can support both EDI aims and high-quality subject pedagogy, showing that the two are closely connected in practice.

'Beyond the Formula': Empowering students through co-creation of inclusive mathematics curricula

Rehan Shah, Queen Mary University of London

Mathematics has traditionally been taught as an exercise in memorisation and repetitive application of formulae, with historical aspects often confined to male, Eurocentric contributions of mathematicians, scientists, and engineers. Consequently, this reinforces the negative perception that mathematics is inaccessible or exclusive, which could be a contributing factor to increased withdrawal rates of minority students from STEM degree programmes.

Many higher education institutions have attempted to address this by prioritising embedding equality, diversity and inclusion within their STEM curricula. An effective way of implementing this is through student-staff co-creation partnerships, which involves students taking on a leading role in designing and democratising teaching content to the new generation of students.

Motivated by this, this presentation talk investigates the impact of diversifying mathematics curricula through the development, implementation and evaluation of student-staff co-created teaching toolkit resources within two first and second-year undergraduate applied mathematics modules to create a more inclusive learning environment for students. Feedback gathered through dissemination of dedicated surveys, focus groups and formative practice quizzes indicated several students were inspired by the resources to learn more about the contributions of diverse individuals in STEM disciplines.

The insights from this project can help change the perception of mathematics by employing inclusive teaching practices, which can improve student engagement and retention, especially among women and ethnic minority student, foster active participation and help dismantle unconscious bias within the community.

Reference: Shah, R. & Belaftonte, A. (2024) Making diversity 'count': inclusivity in STEM curricula, Queen Mary University of London. https://www.sems.qmul.ac.uk/staff/r.shah/research/impact/

From Ancient Egypt to Decolonising the History of Mathematics Curriculum

Marsia Bealby, University of Warwick

Drawing on my experience in academic teaching, my PhD research in Archaeology, and my postgraduate studies in Tertiary and Higher education, this paper considers the decolonisation of the mathematics curriculum through the lens of contemporary pedagogical best practice, using the Rhind Mathematical Papyrus from Thebes, Egypt, as an illustrative case. It shows how modern teaching strategies (such as inclusive curriculum design, comparative problem-solving, and encouraging critical reflection on whose knowledge is represented) can help address the dominance of Eurocentric narratives in mathematics education. By drawing on examples from non-Western mathematical traditions, educators can broaden students' understanding of the history of mathematics as a globally developed discipline and adopt practical approaches that make teaching more diverse, inclusive, and culturally responsive.

Addressing presentation anxiety in undergraduate maths students

Elliot Vincent, University of Warwick

In my experience, very few undergraduate maths students react positively when told they have to do a presentation at some point in their degree. Most of us entered university looking forward to more of the experience we had in school maths class: working through problems in a quiet, solitary manner. Many students approach presentations with the attitude of 'just getting it over with'. Others, particularly (though not exclusively) those who are neurodivergent or struggle with mental health issues, experience levels of anxiety that prevent them from constructively engaging with this aspect of degree training at all.

In a collaboration between the maths and education departments, as well as students with lived experience and the University of Warwick Wellbeing Services, we have designed and deployed a set of resources to help undergraduate maths students address their anxiety around presenting as part of their degrees. These resources are designed to benefit both the 'average' UG student, as well as those who experience more severe anxiety around presenting. We hope that our approach can help students to engage more openly with this aspect of their degree training -- ultimately gaining presentation skills and experience which are beneficial to their future careers, within or outside of academia.

Reading Time in Exams: Support for English Language Learner

Martyn Parker, University of Warwick

This short talk presents findings from the introduction of reading time across all in-person Statistics examinations at the University of Warwick. It outlines the rationale for this change, the approach to implementation, and its perceived impact.

The change emerged from a 2022 student-led project examining diversity and inclusion across a range of dimensions within statistics education. This talk focuses on one particular aspect of that work: the barriers experienced by English language learners. Drawing on a broader study of inclusive practice in statistics and the mathematical sciences, it highlights evidence that performance in assessment may be shaped not only by students' statistical understanding, but also by the linguistic demands of examination tasks.

The literature reviewed indicates that complex wording, unfamiliar vocabulary, passive constructions, abstract presentation, and densely phrased questions can disadvantage English language learners in mathematics and statistics assessments, making it more difficult to evaluate students’ subject knowledge fairly. Although bilingual dictionaries are permitted in examinations, their use carries a time cost. Reading time therefore offers a more equitable opportunity for students to process task wording, identify areas requiring clarification, and reduce cognitive load before the formal writing period begins.

At a time when in-person examinations are again becoming more prominent, the talk offers a timely reflection on the implications of these findings for more inclusive examination design and delivery.

Short talks

Friday 8th May

The knock-on effect of socioeconomic attainment gaps in mathematics

Katie Berlin, University of Warwick

The development of early mathematical skills is a key indicator of students' success throughout their academic journey, lifelong wellbeing and professional opportunities. However, research shows that students from low socioeconomic backgrounds underperform mathematically compared to their more affluent peers from early childhood, with disadvantage gaps widening over time (Rathbun & West, 2004; Starkey & Klein, 2008; James-Brabham et al, 2023; Short & McLean, 2023; etc). This talk will briefly discuss socioeconomic disadvantage gaps in UK schooling and how mathematical skills are inextricably linked to students' success, and explore some of the ways university outreach and Widening Participation initiatives seek to address these gaps.

How to avoid the recolonisation of the curriculum

Catarina Carvalho, University of Hertfordshire

The digital age has ushered in a new form of colonialism—data colonialism—where knowledge, information, and even educational curricula are increasingly controlled by a handful of powerful entities. Mathematics, as a foundational discipline, is both a site of this recolonisation and a potential tool for resistance. This talk argues that by critically examining how mathematical concepts are taught, whose knowledge is valued, and who controls data narratives, educators can disrupt the cycles of exclusion and exploitation.

Short talks

Friday 8th May

Algebra in Context

Nicholas Jackson, University of Warwick

Last year I did a part-time postgraduate course in curriculum development, during which we discussed a number of pedagogical approaches and techniques, particularly centred around inclusivity, accessibility and curriculum design as a social practice. For my project I designed a two-module undergraduate mini-programme called Algebra in Context, comprising a self-contained introduction to abstract algebra, together with seminar-style discussions of interdisciplinary applications and the social and historical context of the subject, and a range of varied and inclusive assessment components.

Research Your Way - a case study

Kat Phillips, University of Warwick

For the past four years a PhD student led team have worked to improve access to postgraduate opportunities in the UK through an online information event centering PhD voices and experiences, and brining opportunities to a level playingfield. This year, supported by the EDIHub+ we are scaling up our initiative to support even more people who may otherwise fall through the gaps in the 'leaky pipeline'. We would like to showcase the work we've done so far, whilst sharing with the audience the challenges we've faced and lessons we've learned along the way.

What can you do? A Piscopia Initiative Resource

Ashleigh Ratcliffe, University of Leicester

We have created a booklet to provide practical guidance for those wishing to do more in their department to support gender diversity. It is not an exhaustive list, and we hope that this is a starting point for most to actively continue their learning about what they can do. In this talk, we will share some of our recommendations.

The advice has come from multiple sources: experience as a Piscopia co-lead, the "How to train your allies" group, Piscopia members and several academics from across the UK.

Matemáticas en español, ¿por qué no?

Alvaro Gonzalez Hernandez, University of Warwick

Spanish is the language with the second-largest number of native speakers in the world. Yet Spanish-speaking researchers are rarely found among the recipients of the major prizes in mathematics. In this talk, I will use Spanish as a case study to explore a broader question: what are the advantages and disadvantages of teaching and conducting research in languages other than English?