

August 2026 



NEWSLETTER

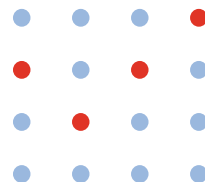


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Prof Francesco Petruccione

Dear NITheCS Community

Following the mid-year break, during which our Winter Internship Programme ran successfully, we enter August with a celebration of the women in the NITheCS community who are pioneering new research and reaching new heights.

We warmly congratulate Dr Yaseera Ismail, our featured scientist this month, on being announced by the Department of Science, Technology and Innovation (DSTI) as a finalist in the South African Women in Science Awards. This is a remarkable achievement, and we wish her every success.

To mark Women's Month, our programme includes a colloquium featuring a panel discussion with four prominent women in science, chaired by a woman. Our August Mini-school, also presented by women, celebrates the remarkable contributions of underrepresented women who have helped shape the theoretical and computational sciences.

The NITheCS Roadshow continues this month with a talk at our KwaZulu-Natal node. This will provide another valuable opportunity to connect with members of the NITheCS community.

Our programme also features several other exciting events throughout August. Please visit the NITheCS website regularly for details and updates.

Several NITheCS–SATACS courses are also scheduled for the second semester, offering further opportunities for learning and collaboration. Please encourage your students to apply.

I wish you a fulfilling and successful month.

Best regards

Prof Francesco Petruccione
Director

Bid launched to protect Papegaaiberg Nature Reserve



A group of citizen scientists from in and around Stellenbosch gathered in Onder Papegaaiberg on 1 August 2026 for the first BioBlitz event.

The event was organised by the Friends of Papegaaiberg and NITheCS, with the aim of investigating the state of animal and plant life within the Papegaaiberg Nature Reserve.

[READ MORE](#)



Upcoming events



NITheCS Colloquium 'A Deep History of Quantitative Finance'

Prof Mesias Alfeus (Stellenbosch University)
Monday, 3 August 2026 | 16h00–17h00 SAST

Venues:

- Road House Cinema (Neelsie), Stellenbosch University;
- satellite venues
- online

[POSTER](#) | [REGISTER](#)



NITheCS Mini-school 'Celebrating Underrepresented Women in Theoretical and Computational Sciences'

Jo-Marie Rossouw (UWC), Saarisha Govender (UKZN), Kerry Porrill (SU & University of Oxford), & Coral Pillay (WITS)

Wednesdays, 5, 12, 19 & 26 August 2026 | 14h00–15h00 SAST

Venues:

- Online

[POSTER](#) | [REGISTER](#)



NITheCS & QSUN Seminar 'High-temperature limit penalising high-frequency quantum fluctuations'

Dr Graeme Pleasance (Stellenbosch University)

Friday, 7 August 2026 | 14h00–15h00 SAST

Venues:

- NITheCS Seminar Room, Stellenbosch University

[POSTER](#) | [REGISTER](#)



NITheCS Colloquium Wi-NITheCS Women's Month Panel Discussion: 'Women Shaping the Future of Science'

Panellists: Prof Amanda Weltman (University of Cape Town), Prof Nokwanda 'Nox' Makunga (Stellenbosch University), Dr Yaseera Ismail (Stellenbosch University), & Dr Chevarra Hansraj (Stellenbosch University); chair, Dhiya Dharampal (Stellenbosch University)

Monday, 17 August 2026 | 16h00–17h00 SAST

Venues:

- Road House Cinema (Neelsie), Stellenbosch University; satellite venues
- online

[POSTER](#) | [REGISTER](#)



NITheCS & UKZN Seminar 'Recent advances in non-linear electrodynamics (NLED) and analogue gravity'

Prof Eduardo Bittencourt (UNIFEI-Brazil)

Thursday, 13 August 2026 | 11h30–12h30 SAST

Venues:

- NITheCS Seminar Room, University of KwaZulu-Natal, Westville Campus, 3rd Floor, H-Block, School of Chemistry and Physics;
- online

[POSTER](#) | [REGISTER](#)



NITheCS Colloquium

'1st & 2nd Papegaaiberg iNaturalist BioBlitzes: Seeding the nexus between community interaction, good governance and conservation in Stellenbosch'

Prof Ruan Veldtman (Stellenbosch University & SANBI)

Monday, 24 August 2026 | 16h00–17h00 SAST

Venues:

- Road House Cinema (Neelsie), Stellenbosch University; satellite venues
- online

[POSTER](#) | [REGISTER](#)



NITheCS Webinar

'Modelling the glucose–insulin system for diabetes: problems and perspectives'

Prof Andrea De Gaetano (Institute for Systems Analysis and Informatics "A. Ruberti", National Research Council of Italy, Rome, Italy)

Tues, 1 September 2026 | 14h00–15h00 SAST

Venues:

- NITheCS Seminar Room, Stellenbosch University;
- Online

[POSTER](#) | [REGISTER](#)



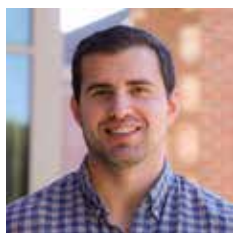
Learning from Observational Data Summit 'Turning Observational Data into Decision-grade Evidence'

3–4 September 2026

Venues:

- Table Bay Hotel, V & A Waterfront, Cape Town

[MORE INFO](#) | [APPLY](#)



Advanced Animal Movement Modelling Training Workshop

Lead facilitator: Dr Josh Cullen (UC Santa Cruz)

17–18 September 2026 | 08h30–16h30 SAST

Venues:

- NITheCS Seminar Room, Stellenbosch University;
- Online

[POSTER](#) | [REGISTER](#)



Science Forum South Africa

2–4 December 2026

Venues:

- CSIR International Convention Centre, Pretoria

[MORE INFO](#)



10th International Conference on Quantum Techniques in Machine Learning (QTML2026)

'Bridging Quantum Computing and Machine Learning'

6–11 December 2026

Venues:

- Jan Mouton Learning Centre, Stellenbosch University

[MORE INFO](#)



Missed an Event?

Want to rewatch an event?

- [Visit our website](#) for details of past events.
- Watch recorded talks on the [NITheCS YouTube channel](#).
- To inform us of an event that may interest the NITheCS community, [upload your content HERE](#).

External events

Abdus Salam International Centre for Theoretical Physics (ICTP), Italy

View events in the [ICTP Scientific Calendar](#).

International Space Summit Africa

Date: 10–12 August 2026

Venues: CSIR International Convention Centre, Pretoria

[MORE INFO](#) | [REGISTER](#)

RSAfrica26 (Research Software Africa 2026)

'The International Conference of Research Software in Africa'

Date: 25–28 August 2026

Venues: Online

[MORE INFO](#)

Workshop on Mathematical Optimization and Control For Industrial and Societal Challenges in Sub-Saharan Africa

Date: 7-10 September 2026

Venues: Manhattan Hotel, Pretoria

[MORE INFO](#)

24th International Conference of Numerical Analysis and Applied Mathematics

Date: 5-21 September 2026

Venues: Galaxy Hotel, Heraklion, Crete, Greece

[MORE INFO](#) | [REGISTER](#)

2026 NRF Next Generation and Emerging Researchers Symposium

Date: 6-9 October 2026

Venues: Birchwood Hotel & OR Tambo Conference Centre, Boksburg

[MORE INFO](#)

2026 Workshop on Trends in Modelling and Analysis in Life Sciences

Date: 18-21 October 2026

Venues: Tshikwalo Game Lodge, Dinokeng Game Reserve

[MORE INFO](#) | [REGISTER](#)

Functional Analysis and Operator Theory South Africa Workshop (FAOTSA 2026)

Date: 28 October – 1 November 2026

Venues: North-West University, Potchefstroom

[MORE INFO](#) | [REGISTER](#) (by 4 Oct)

AI, Uncertainty & Simulation Workshop

'Bayesian Methods & Neural Inference'

Date: 16-20 November 2026

Venues: Mauritius

[MORE INFO](#)

67th Annual Conference of the South African Statistical Association (SASA)

Date: 23-27 November 2026

Venues: Birchwood Hotel, Boksburg

[MORE INFO](#)

Science Forum South Africa (SFSA)

'Igniting Conversations about Science – From Research to Impact'

Date: 2-4 December 2026

Venues: CSIR International Convention Centre, Pretoria

[MORE INFO](#)

4th Edition of the Workshop on Topology and Topological Groups (WTTG2026)

Date: 7-9 December 2026

Venues: AIMS, Muizenberg

[MORE INFO](#)

3MC-PIMS-SIMONS Summer School on Mathematical Modelling and Emerging Tools

Date: 14–24 December 2026

Venues: Arba Minch University, Arba Minch, Ethiopia

[MORE INFO](#) | [REGISTER](#)

The 66th ISI World Statistics Congress 2027

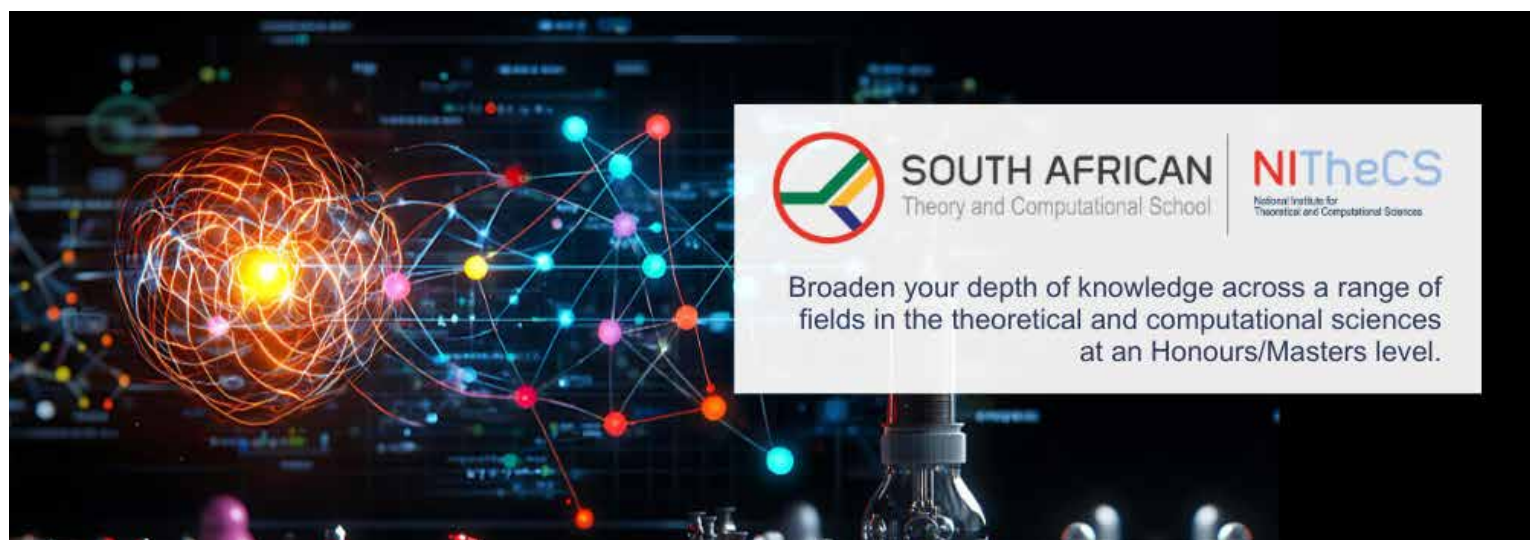
Date: 11–15 July 2027

Venues: Lusaka, Zambia

[MORE INFO](#)



Courses



SATACS-NITheCS Courses for 2026:

Quantum Field Theory I

27 July – 27 October 2026

Riemann Surfaces

31 July – 20 October 2026

Advanced General Relativity

31 July – 31 October 2026

Advanced Partial Differential Equations

11 August – 27 October 2026

[MORE INFO](#)



Featured scientist

Dr Yaseera Ismail

This Women's Month, NITheCS celebrates Dr Yaseera Ismail, a quantum physicist whose research is helping to advance secure communication and strengthen South Africa's position in quantum technology.

Dr Ismail began her research career in classical optics at the Council for Scientific and Industrial Research in Pretoria while completing her master's degree. She later moved into quantum optics during her PhD, at a time when experimental quantum research in South Africa was still limited.

[READ MORE](#)



Publications

To view the most recent publications by NITheCS Associates, staff, postdoc researchers and students who included their NITheCS affiliation on their publications, [please click here](#).

Additionally, articles and publications with a NITheCS affiliation can be viewed on [Nature Index](#).

A Comparative Study of Persistence and Mapper in Topological Data Analysis

Kelie Marline, Momo Nizegha, Cerene Rathilal, and Maria Vivien Visaya ✉

<https://doi.org/10.1142/S0219525926500049>

ABSTRACT:

Topological data analysis offers techniques for uncovering structure in high-dimensional datasets, with persistent homology and the Mapper algorithm being two widely used methods. Persistent homology captures topological features across filtration scales, while Mapper constructs a graph-based summary of the data at a chosen resolution. In this paper, we apply both methods to the Wisconsin Breast Cancer Dataset in order to compare the type of structural information each method provides. Rather than treating persistent homology and Mapper as competing tools, we frame them as complementary approaches. Persistent homology summarizes the underlying shape of the data across different scales, while Mapper highlights clustering structure, local connectivity, and regions where benign and malignant samples exhibit overlapping characteristics in the feature space. We further support the visual persistent homology analysis using Wasserstein distances between persistent diagrams. Together, persistent homology and Mapper provide complementary topological perspectives on the same data: persistent homology identifies a quantitatively distinct topological structure between the benign and malignant groups (quantified via the 1-Wasserstein distance), while Mapper localizes where this difference manifests in the data as transition zones and class-dominated subgraphs. Neither method alone provides both the global algebraic summary and the local graph-level resolution that the combined analysis yields.

[READ MORE](#)

Wisaarkhu: a global community

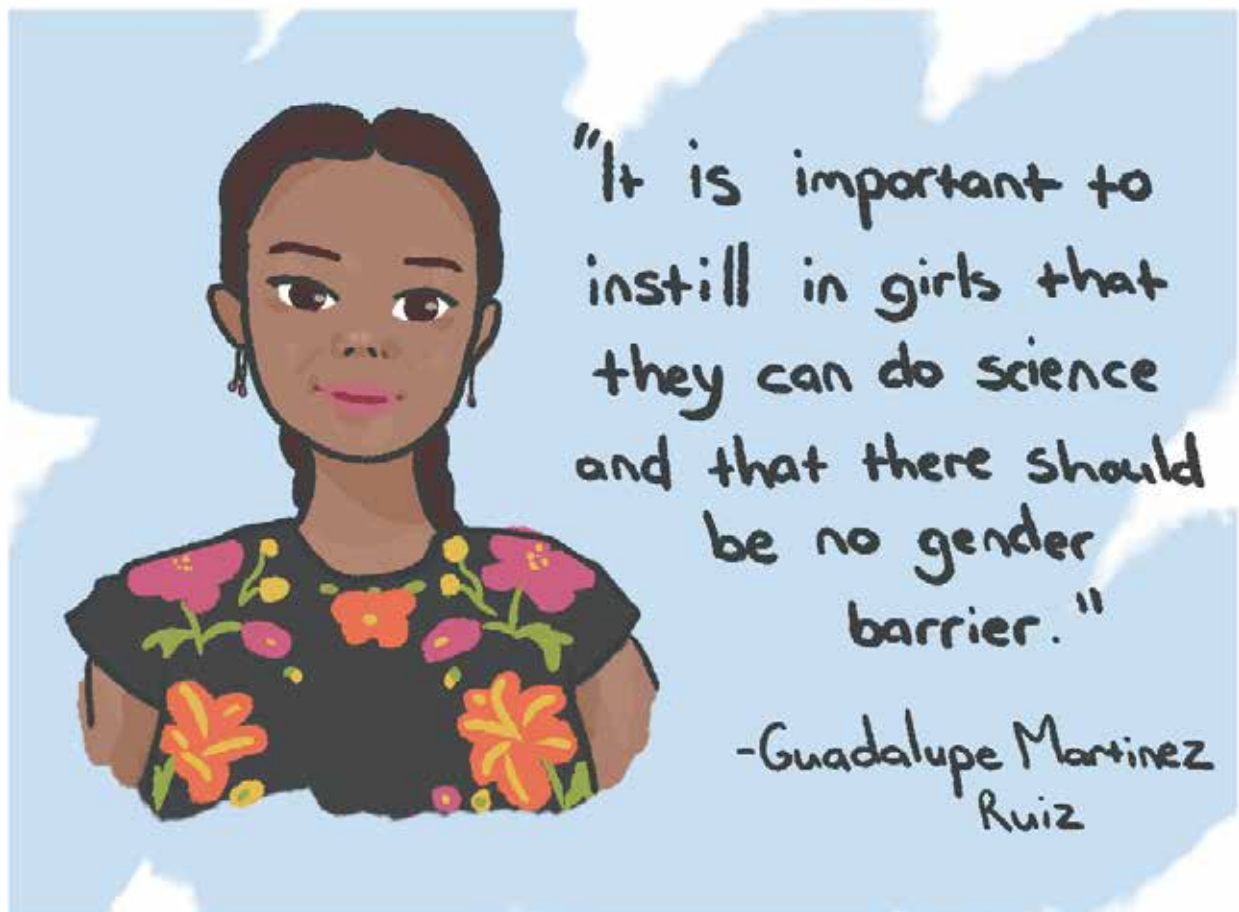
The Wisaarkhu community seeks to reveal the beauty and power of mathematics and the basic sciences, and how they provide a real edge in practical applications – from modelling ecosystems to applying physics, chemistry, and computer science to real-world challenges.

Join Wisaarkhu on this journey of discovery and unlock the possibilities of the basic sciences. By supporting and sharing the community, you help make science and mathematics accessible and inspiring for all.

[VISIT THIS SITE](#)

Featured art from Wisaarkhu:

'Guadalupe Martinez Ruiz' by Liani Malherbe



International scholarships – various

View scholarship opportunities from China, Erasmus +, Intra-Africa, Ireland, France, Germany and the United Kingdom.

[MORE INFO](#)

Postdoctoral Fellowship in Number Theory – Stellenbosch University

Application deadline: 15 August 2026

The Mathematics Division at Stellenbosch University is inviting applications for a one-year Postdoctoral Fellowship in Number Theory under the supervision of Prof Florian Luca. The research focuses on analytic number theory, Diophantine approximations and linear recurrent sequences, with projects involving arithmetic functions, Diophantine equations and the arithmetic properties of recurrent sequences.

Applicants should hold a PhD in Mathematics (or a related field) obtained within the past five years and have a strong background in number theory. The fellowship commences on 1 November 2026.

[MORE INFO](#)

Trinity College Cambridge Junior Research Fellowships 2027

Application deadline: 27 August 2026 at 13h00 SAST

Applications are open for the Trinity College Cambridge Junior Research Fellowships, offering outstanding early-career researchers the opportunity to spend up to four years undertaking independent postdoctoral research at the University of Cambridge. Fellowships are available across all academic disciplines and commence in October 2027. Research Fellows are supported to pursue their own research programmes while participating in the academic life of the College.

[MORE INFO](#)

MUST Deep Learning Postgraduate Scholarships 2027

Application deadline: 30 August 2026

Applications are now open for the MUST Deep Learning Postgraduate Scholarships at North-West University for the 2027 academic year. The programme offers Master's scholarships of R185 000 per annum and PhD scholarships of R205 000 per annum for students interested in artificial intelligence and deep learning research. Research opportunities include deep learning, deep time series modelling, and applications in space science, agriculture, assistive technologies and biomedical imaging.

[MORE INFO](#)

AIMS South Africa – Fully Funded Master's in Mathematical Sciences

Application deadline: 31 August 2026

Applications are open for the AIMS South Africa Fully Funded Master's in Mathematical Sciences. Open to graduates who have completed an Honours degree or a four-year degree with a strong mathematics component, the programme develops advanced mathematical, computational and problem-solving skills. Graduates are well prepared for careers and further study in research, AI, data science, finance, education, technology and the public sector.

[MORE INFO](#) | [REGISTER](#)

Oppenheimer Memorial Trust Scholarships

Application deadline: 31 August 2026

Applications are open for two Oppenheimer Memorial Trust (OMT) funding opportunities:

1. Master's, Doctoral and Postdoctoral Scholarships –

Funding is available for studies commencing between January and June 2027 at South African and international higher education institutions.

[MORE INFO](#)

2. Sabbatical Study Scholarships –

These awards support full-time academics at South African higher education institutions undertaking sabbatical study commencing between January and March 2027.

[MORE INFO](#)

Marie Skłodowska-Curie Actions (MSCA) Postdoctoral Fellowships 2026 – CERN opportunity

Application deadline: 9 September 2026

CERN's Theoretical Physics Department invites applications for MSCA European Postdoctoral Fellowships 2026, with CERN as host. A limited number of positions are available, with preselection based on research profile. Please note that CERN does not host Global Fellowships under this scheme. Interested researchers should apply for CERN as the host institution – read the details for the [CERN OPPORTUNITY](#).

The MSCA Postdoctoral Fellowships support researchers with a PhD to advance their careers through international mobility, interdisciplinary research, and skills development. Open to applicants of any nationality, the programme includes both European and Global Fellowships across academic and non-academic sectors.

[MORE INFO](#)

CSIR DSTI Inter-Programme Bursary Scheme (IBS)

Application deadline: 15 September 2026

The call for applications for the 2027 academic year is now open for the CSIR DSTI Inter-Programme Bursary Scheme (IBS), which is intended to support full time studies at Honours, 4th year Engineering/Postgraduate Diplomas, Masters and PhD level at any South African public university.

[MORE INFO](#)

DAAD Doctoral Scholarships in Germany

Application deadline: 24 September 2026

The German Academic Exchange Service (DAAD) is offering scholarships for outstanding international students to pursue a doctoral degree in Germany from 2027. The programme supports individual doctoral research or participation in a structured doctoral programme at a German university or research institute, with funding for up to four years. The scholarship includes a monthly stipend of €1,400, health insurance, a travel allowance, an annual research allowance, and additional support where applicable, including language training and family benefits. Selection is based on academic excellence, the quality of the proposed research project, and the applicant's future potential.

[MORE INFO](#)

France–South Africa Master's Scholarships 2027

Application deadline: 8 October 2026

Applications are now open for the France–South Africa Master's Scholarships 2027, offering South African, Lesotho and Malawi citizens under the age of 30 the opportunity to pursue a Master's degree in France from September 2027. The programme prioritises STEM and related social sciences and allows students to study in English, with no French language requirement. The scholarship includes a monthly living allowance, one return flight, social security cover, visa fee exemption and priority access to student accommodation.

[MORE INFO](#)

South African Reserve Bank Scholarships 2027

Application deadline: 31 October 2026

The South African Reserve Bank (SARB) is inviting prospective Master's degree in Data Science and Machine Learning students to apply for a full scholarship for the 2027 academic year.

For students to be considered for the scholarship, they must meet the following requirements:

- have provisional acceptance into one of the identified Master's programmes;
- have selected modules that should include financial analytics topics;
- have a relevant Honours degree with an average of at least a 65% overall pass mark;
- be a full-time student;
- be a South African citizen; and
- be younger than 35 years of age.

[MORE INFO](#) | [APPLY](#)

Early Career Researcher Fellowships

Application deadline: 17 November 2026

The Institute for Mathematical Sciences and Applications (IMSA) invites outstanding early-career mathematical scientists at South African universities and research institutions to apply for a minimum four-week collaborative research visit to the Mathematical Institute at Balliol College Oxford in June 2027.

Applicants must complete the application form and submit a letter of intent to Prof Mike Giles FRS at mike.giles@maths.ox.ac.uk and Prof Emeritus Loyiso Nongxa (uploaded via the application form).

[APPLICATION FORM](#)

NRF Honours Funding for 2027

Application deadline: 23 November 2026 (please familiarise yourself with your own university's internal submission deadlines, as these may differ from the NRF deadlines).

The NRF is offering funding for Honours studies in 2027. Eligible students in the NITheCS community are encouraged to apply for NRF funding through the [NRF Connect System](#). Please read the NRF documentation carefully before applying, and quote the **NITheCS UID/grant number: 65212** in the application category section of the application.

Preference will be given to applicants affiliated with NITheCS Associates, NITheCS Research Focus Areas, and HDIs.

[MORE INFO](#)

EURAXESS Africa – Doctoral and Postdoctoral opportunities

View highlighted [doctoral](#) and [postdoctoral](#) opportunities across leading European research organisations and higher education institutions in all disciplines.

To share opportunities with the NITheCS community, [CLICK to upload your content](#).



Grants/Funding

External funding

External funding is available for research, conferences, travel, collaborative grants and postdoctoral fellowships.

[MORE INFO](#)

South Africa–Tunisia Joint Research Programme 2027–2030

Application deadline: 8 September 2026

The NRF and Tunisia's Ministry of Higher Education and Scientific Research invite joint research proposals under the South Africa–Tunisia Joint Research Programme 2027–2030. Funding is available for collaborative projects in nanotechnology, AI, the water–food–energy nexus, health, and space and astronomy. Projects may run for up to three years, with support for researcher mobility, scientific meetings and research-related activities. South African applicants must hold a PhD and be affiliated with a recognised higher education or research institution.

[MORE INFO](#)

NRF-JSPS Joint Research Mobility Call 2027-2028

Application deadline: 11 September 2026

The National Research Foundation (NRF) and the Japan Society for the Promotion of Science (JSPS) have opened the 2027-2028 Joint Research Mobility Call, supporting collaborative research projects between South African and Japanese researchers in the natural sciences, social sciences and humanities. Successful projects will receive funding for researcher mobility, workshops and collaborative research activities over a two-year period. South African researchers with a PhD who are affiliated with recognised higher education or research institutions are eligible to apply.

[**MORE INFO**](#)

Call for Mobility to France – Insmi 'Postes Rouges' 2027

Application deadline: 24 September 2026

The French National Institute for Mathematical Sciences and their Interactions (Insmi) invites mathematicians employed outside France and above postdoctoral level to apply for funded research visits to French mathematics departments. Visits of two to three months must take place between 1 February and 30 November 2027. Funding is intended to cover travel, visa, accommodation and living expenses. Applications must include a research proposal, CV, recent publications, provisional visit dates and confirmation from the proposed host department.

[**MORE INFO**](#)

Host a German Undergraduate Research Intern in 2027

Application deadline: 30 September 2026

Applications will soon open for research institutes wishing to host a German undergraduate student through the DAAD RISE Worldwide programme. The initiative places German Bachelor's students in research internships in the natural sciences, engineering and computer science at institutions around the world, with DAAD providing scholarships for up to 300 interns each year.

[**MORE INFO**](#)

The Association of Commonwealth Universities (ACU) Early Career Conference Grants

Application deadline: 13 October 2026

These grants support emerging researchers and their universities by enabling participation in in-person conferences held in Commonwealth countries outside their country of work. For information on current and upcoming ACU funding opportunities for university staff and students, please visit their [**website**](#).

[**MORE INFO**](#)

European Research Council (ERC) Starting Grants 2027

Application deadline: 14 October 2026

The ERC has opened applications for its Starting Grants 2027, which support outstanding early-career researchers in establishing their first independent research team or programme. Open to researchers of any nationality who completed their PhD within the ten years preceding 1 January 2027, the grants are available across all research disciplines and provide up to €1.5 million over five years, with additional funding available for eligible start-up and relocation costs. Research must be conducted at a host institution in an EU Member State or Associated Country

[**MORE INFO**](#)

ICIAM Conference Support for Developing Countries

Application deadline: 31 October 2026

The International Council for Industrial and Applied Mathematics (ICIAM) offers limited funding to support participation from developing countries at conferences, workshops, and research schools in applied and industrial mathematics. Up to USD 3,500 per event is available to provide fellowships for selected participants. Organisers may submit applications at least a year in advance of the event.

[MORE INFO](#)

Calls

Call for Abstracts: 66th World Statistics Congress (WSC 2027)

Submission deadline: 8 October 2026

The International Statistical Institute (ISI) invites submissions for Contributed Paper and Poster Sessions at the 66th World Statistics Congress (WSC 2027), taking place in Lusaka, Zambia, from 11–15 July 2027.

Researchers, particularly early- and mid-career statisticians, are encouraged to submit abstracts (maximum 500 words) for oral or poster presentations. Accepted contributions will be included in the official congress programme.

[MORE INFO](#)

Call for Papers: 'Responsible and Open Science in Action – Africa, Europe and Global South Perspectives'

Submission deadline: 31 December 2026

The Pacific-Basin Finance Journal invites submissions to a Virtual Special Issue on 'Responsible and Open Science in Action: Africa, Europe and Global South Perspectives'.

The issue seeks empirical, methodological, reflective, and case-based contributions exploring how responsible and open science practices are implemented, adapted, and challenged across diverse research environments. Topics include open data, replication, research transparency, capacity building, research infrastructure, and responsible research practices in finance and related fields.

The issue is led by Prof Mesias Alfeus (Stellenbosch University), with co-editors from Strathmore University, Corvinus University of Budapest, and the Federal University of Paraíba.

[MORE INFO](#)

Host your 2028 event at CIRM

The Centre International de Rencontres Mathématiques (CIRM) in Marseille, France, is inviting proposals from researchers interested in hosting an event at CIRM in 2028. Proposals may include workshops, conferences, research schools or thematic months. Successful applicants will receive comprehensive support from CIRM in organising and hosting their event.

[MORE INFO](#)

Foreign nationals with visa issues

Do you know of foreign nationals in the theoretical and computational sciences who are struggling to get a South African visa?

We will try to help expedite the visa process for foreign nationals who:

- have been appointed to fill critical positions in the theoretical and computational sciences in South Africa, or
- have accepted a postdoctoral position at a South African university in the abovementioned scarce skills fields.

Please encourage them to [share their details with us here](#).

NITheCS CONTACT DETAILS:

info@nithecs.ac.za

