

# FEATURED ARTICLES



**Revolutionising Global Electrification: The Legacy of** Jayant Baliga and the IGBT

# 2024 Millennium **Technology Prize**

Prof Jayant Baliga revolutionised global electrification with his invention of the Insulated Gate Bipolar Transistor (IGBT), enabling efficient, compact power systems that power clean energy, electric transport, and industry - laying the foundation for sustainable and next-generation semiconductor technologies. Read more

### A Chat with Physics' Accidental Rockstar **Prof Duncan Haldane**



Prof Duncan Haldane, 2016 Nobel Laureate in Physics, revolutionised quantum science with his pioneering work on topological phases of matter. Driven by curiosity and a passion for teaching, he believes great discoveries often arise from small anomalies, inspiring new generations through open-minded exploration.

Read more

# **EVENT HIGHLIGHTS**



## This seminar series features leading physicists

IAS Frontiers Seminars: Quantum Horizons



and engineers sharing the latest advances in quantum phenomena. As 2025 marks the United Nations International Year of Quantum Science and Technology, recent talks by Prof Shuyun Zhou (Tsinghua University) and Prof Paul Skrzypczyk (University of Bristol) highlighted how light and measurement innovations are advancing quantum materials and computing. Read more

IAS Discovery Science Seminars and STEM Graduate Colloquia

Jointly Organised with the Graduate Students' Clubs **Memristive Materials and Devices Quantum Field Theory:** 

# A Universal Language



universal language of physics. From phonons and critical phenomena to graphene and the fractional quantum Hall effect, his talk showcased QFT's profound power in unifying and advancing modern theoretical physics. Read more

highlighted quantum field theory (QFT) as a

The Smallest Stepping Stone: Quantum **Dot Physics Using Atomic Defects** 

# for Post-Moore Electronics



memristive devices, 2D/CMOS hybrid chips, and NSRAM technology for efficient AI hardware, while introducing a global talentmatching platform driving innovation in materials and computing. Read more

including

neuromorphic

Organic Semiconductors for Renewable **Energy and Hydrogen Safety Applications** 



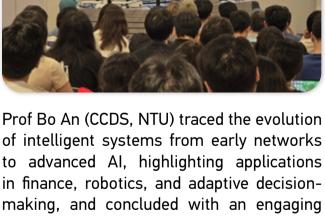
hBN, integrated with graphene electrodes for tunable energy control, opening new possibilities for quantum sensing and device engineering. Read more From Algorithmic and

Reinforcement Learning-Based to LLM-Powered Agents



hydrogen safety, featuring high-efficiency solar cells and sensitive hydrogen sensors that translate atomic-scale innovation into real-world impact. Read more Semiconductors as the New Frontiers:

Convergence, Challenges and Startup Opportunities



Q&A. Read more UPCOMING EVENTS 🚄



**IAS Frontiers Seminars: Quantum Horizons** 

Prof Mohammad Hafezi, 3 November 2025

Prof Alberto Morpurgo, 1 December 2025

Read more

### **Quantum Optics Meets** Correlated Electronic States



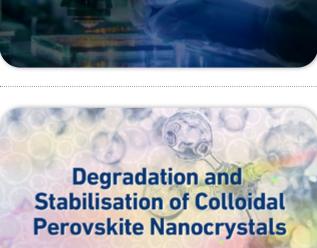
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Two-Dimensional Quantum Materials by Prof Alberto Morpurgo Nonlinear **Topological Photonics** 

IAS STEM Graduate Colloquium by Prof Mohammad Hafezi

SPMS MAS Executive Classroom 1

4 November 2025, SPMS LT4 Register now



IAS STEM Graduate Colloquium

by Prof Qingsen Zeng 6 November 2025, SPMS LT5

Register now



For enquiries, email us at <a href="mailto:iasevents@ntu.edu.sg">iasevents@ntu.edu.sg</a>

October 2025