FACULTY OF SCIENCE
THE UNIVERSITY OF HONG KONG
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DEAN
Professor Qiang ZHOU

Press release For immediate release

Three HKU scholars awarded RGC Senior Research Fellowships and Research Fellowships
To advance black hole astrophysics, AI geospatial mapping, and medical bioprinting

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Three distinguished scholars from the University of Hong Kong (HKU) have been honoured under the Research Grants Council's (RGC) Senior Research Fellow Scheme (SRFS) and Research Fellow Scheme (RFS) for the 2026/27 academic year.

RGC Senior Research Fellow Scheme

Professor Liang Shunlin, Head & Chair Professor, Department of Geography at the Faculty of Social Sciences

Project title: Advancing Multimodal AI for Socioeconomic Mapping Using Satellite and Geospatial Data

Traditional sources of socioeconomic information, such as censuses and surveys, face limitations in timeliness and completeness. Professor Liang's project addresses these gaps by developing a new generation of multimodal artificial intelligence tools that combine satellite observations, maps, and diverse geospatial data. The project will generate high-quality, real-time indicators to analyse urban development, economic activity, infrastructure, community well-being, and environmental resilience. Using the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) as a primary demonstration region, the team will produce high-resolution data products to empower policymakers and researchers to make evidence-based decisions, driving sustainable regional development.

Professor Nicholas Xuanlai Fang, Professor and Chair of Photonics Innovation, Department of Mechanical Engineering, Faculty of Engineering

Project title: Developing Next-Generation Bioprinting Phantoms for Early Screening and Imaging Training of Cardiovascular and Cerebrovascular Diseases

To address the lack of physiological dynamics and realistic ultrasound imaging features in current static surgical training models, Professor Fang's lab is pioneering patient-specific, bioprinted phantoms that replicate both precise anatomy and physiological responses. The core breakthrough lies in a novel class of "metagels" that decouple mechanical stiffness from acoustic impedance, allowing independent optimisation of tactile feel and

sonographic visibility. Integrating multi-scale 3D printing and a closed-loop validation system via quantitative ultrasound, this project transforms phantom fabrication into a calibrated, quality-controlled engineering process. The technology holds immense potential to reduce intraoperative risk during complex surgeries and position Hong Kong as a critical competitor in the global medtech supply chain.

RGC Research Fellow Scheme

Professor Lixin Dai, Associate Professor in the Department of Physics at the Faculty of Science

Project title: Modelling Super-Eddington Accretion Physics from Cosmic Dawn Quasars to Gravitational-Wave Counterparts

Classical physics dictates a maximum rate at which black holes can consume matter, known as the Eddington limit, beyond which radiation pressure halts the inflow. However, cosmic observations reveal that black holes frequently breach this limit, powering spectacular phenomena—from tidal disruption events and binary black hole mergers in AGN disks to the recently discovered "Little Red Dots" in the early universe. Professor Dai's team will forge the first unified framework for super-Eddington accretion. Utilising state-of-the-art General Relativistic Magnetohydrodynamic simulations and radiative transfer calculations, the project will predict multi-wavelength signatures to directly inform flagship global space observation missions, including the James Webb Space Telescope and the Einstein Probe. The project aims to establish Hong Kong as a major international hub for black hole astrophysics.

Extending heartfelt congratulations to the awardees on their well-deserved recognition, Professor Stephanie Ma, Vice-President and Pro-Vice-Chancellor (Research) (Interim) at HKU, remarked: "My warmest congratulations to Professor Liang, Professor Fang, and Professor Dai on receiving these prestigious RGC fellowships. Their pioneering projects—spanning multimodal AI geospatial mapping, revolutionary medtech bioprinting, and frontier black hole astrophysics—exemplify HKU's commitment to driving high-impact, interdisciplinary innovation. We extend our sincere gratitude to the Research Grants Council for its continuous support of HKU researchers, empowering our scientific community to push research boundaries forward and solidify Hong Kong's position as an international hub for research excellence."

For more details on the RGC Senior Research Fellow Scheme and Research Fellow Scheme, please visit the RGC official website.

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