The Quantum Mechanics Observer

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King's Team Gains First UK Academic Access to Google's Willow Quantum Processor

A research team at King's College London, led by Dr Eleanor Crane, has become the first UK academic team to be granted access to Google Quantum AI's Willow quantum processor. Access was secured through a competitive partnership with the National Quantum Computing Centre (NQCC), and it places the team in a position to work with one of the most advanced experimental quantum computers currently available.

The project centres on a new approach on simulating complex quantum systems using mathematical models inspired by neural networks. The researchers plan to create quantum versions of these models and run them on the Willow chip, with the aim of finding out whether quantum computers can tackle such problems more efficiently than classical supercomputers.

The work targets interacting quantum systems, in which large numbers of particles continually affect one another. Classical computers struggle to simulate these systems, since the required calculations grow exponentially as more particles are added. By testing their models on Willow, the team hopes to show a practical quantum advantage for this kind of simulation.

The methods developed could be applied in materials science, superconductivity and molecular simulations for drug discovery. The partnership strengthens King's standing in quantum computing, creating a direct link with Google Quantum AI and giving students and researchers access to world-leading quantum hardware.

REFERENCE

King's College London. (2026, May 28). King's partners with Google Quantum AI and National Quantum Computing Centre to explore quantum fundamentals. https://www.kcl.ac.uk/news/kings-partners-with-google-quantum-ai-and-national-quantum-computing-centre-to-explore-quantum-fundamentals

26 JUNE 2026

New Quantum Sensor for Future Physics Discoveries

Researchers at King's College London have helped motivate a new prototype quantum sensor, developed by Imperial College London, that could one day solve major challenges in fundamental physics. Professor John Ellis and Dr Christopher McCabe provided the scientific motivation for the work, which forms part of the Atom Interferometer Observatory and Network (AION) collaboration.

The study showed that comparing two atom interferometers, which use lasers to measure the quantum behaviour of atoms, cancels experimental noise and recovers signals that would otherwise be lost. Once scaled up, the sensor could help search for dark matter and gravitational waves, and could also support climate monitoring and un-jammable navigation as an alternative to GPS. Like the small prototype colliders that preceded the Large Hadron Collider, it proves the technology works and paves the way for larger experiments, including the proposed Atom Interferometry CERN Experiment (AICE).

REFERENCE

King's College London. (2026, June 26). New quantum sensor paves the way for future discoveries in physics. https://www.kcl.ac.uk/news/new-quantum-sensor-paves-the-way-for-future-discoveries-in-physics

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