UC SANTA BARBARA

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On the Same Wavelength

California is a hotspot for research across the quantum sciences. World class universities, national labs and private companies in the state are all working to understand the quantum world and translate insights into new technologies.

Among those front and center: UC Santa Barbara, which organized a recent workshop on emerging directions and opportunities in quantum science. Over 65 scientists gathered on campus to discuss topics including quantum materials, quantum dynamics, quantum computing and networking, and academic-industrial partnerships.

“We intended the talks to give a strategic picture to a broad audience in quantum sciences,” said David Weld, an assistant professor of physics and one of the workshop’s five local coordinators. “We made a conscious choice to keep the focus largely on scientific topics, rather than particular funding opportunities, which allowed overarching themes to emerge naturally from the discussion.”

With many disciplines falling under the umbrella of quantum science, the presentation topics spanned a variety of subfields, including condensed matter physics, materials science, atomic physics and nano-photonics. Also present at the workshop were representatives from national labs, federal agencies and several companies in California that are developing quantum technologies.

“There were many excellent presentations that discussed novel methods of sensing with entangled states, identified novel platforms for quantum bits and quantum

computing, and showed theoretical advances in quantum computer science," said physics professor Ania Jayich, another of the workshop's coordinators, along with professors Wim Van Dam, Chris Palmstrom and Dirk Bouwmeester.

Some recurring themes gathered support over the course of the weekend. Attendees expressed a strong desire to share technologies across institutions. Many also hoped to involve engineers more closely in the development of quantum technologies and establish better multi-user fabrication facilities.

"It's an exciting time for quantum science, with many new thematic and regional collaboration opportunities emerging," said Weld. "Given California's enormous but broadly distributed strengths in experimental and theoretical quantum science, it made sense to try to get people together in one place for scientific and strategic discussion."

About UC Santa Barbara

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.