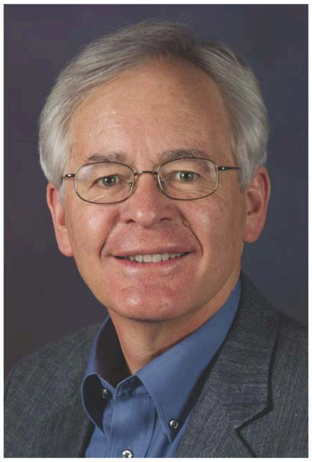
ipam institute for pure & applied mathematics

Public Lecture



Robert E. Ecke

Robert Everett Ecke is an American experimental physicist specializing in nonlinear dynamics, turbulence, and granular materials. He is a Laboratory Fellow and Director Emeritus of the Center for Nonlinear Studies at Los Alamos National Laboratory and an Affiliate Professor of Physics at the University of Washington. A Fellow of the APS and AAAS, Ecke has held leadership roles in both organizations.

Born in Los Angeles in 1953 and raised in Helena, Montana, Ecke earned a B.S. and Ph.D. in Physics from the University of Washington. He joined Los Alamos in 1983, where he has published over 110 research articles, earning an h-index of 43 with 5,400+ citations.

Tales of Rotating Thermal Convection: How rapid rotation drives heat transport, creates novel vortex structures, and relates laboratory experiments to the motions of the Earth's outer core.

How rapid rotation drives heat transport, creates novel vortex structures, and relates laboratory experiments to fluid motions on the Earth. Gravity is the dominant large-scale force in the universe and the reaction of fluids to gravity is either unstable - hot air rises, cold air falls - or stable - heavy fluid stays below lighter fluid. When stable, waves are typical - waves on the ocean surface - whereas unstable states lead to convection where lighter and heavier fluid interchange creating motion that carries heat. On Earth and on planets in the solar system as well as in many stars, rotation plays a key role in shaping the flow and controlling the transport of heat. The Earth's jet stream results from this interplay as does the motion of ocean currents. To understand the basic principles of rotating convection, scientists have built model systems that can be studied in great detail using experiments, numerical simulations, and theory. I'll tell you some of the fascinating ideas that shape this work and how they relate to understanding rotating flows in nature.

Monday, January 27, 2025 4:30 pm

IPAM Auditorium

Reception immediately following hosted by IPAM.
This lecture will be accessible to a general public audience.

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For more information, visit the program webpage:
https://www.ipam.ucla.edu/programs/public-lectures-events/