

PREVIOUS HUDSPETH LECTURERS

Nergis Mavalvala (Spring 2019)

Marble Professor of Astrophysics, Massachusetts Institute of Technology

Gravitational Waves: From first detections to mapping out the observable Universe

David Reitze (Fall 2016)

Executive Director of LIGO, California Institute of Technology

Seeing Black: Detecting Gravitational Waves From Binary Black Hole Mergers for the First Time Ever Using LIGO

Stephen E. Harris (Fall 2014)

Professor Emeritus, Stanford University

Parametric Down Conversion Over 50 Years: From Microwaves to X-Rays

Myriam P. Sarachik (Fall 2013)

Distinguished Professor, City University of New York

Quantum Tunneling and Magnetic Deflagration

Gabriel Kotliar (Spring 2013)

Board of Governors Professor Chair of Physics, Rutgers University

Towards Material Design Using Strongly Correlated Electron Materials

H. Jeff Kimble (Spring 2011)

William L. Valentine Professor and Professor of Physics, California Institute of Technology
Quantum Optics: A Voyage into Hilbert Space Enabled by E. C. G. Sudarshan

James Cronin (Spring 2009)

Professor of Physics Emeritus, Enrico Fermi Institute, The University of Chicago

Study of the Highest Energy Cosmic Rays with the Pierre Auger Observatory

Matthew Fisher (Spring 2008)

Professor of Physics, Kavli Institute of Theoretical Physics (UC-Santa Barbara)

A Brief History of Particle Physics, Miletus to the Supercollider

Michael E. Fisher (Spring 2007)

Distinguished University Professor and Regents' Professor, University of Maryland

Molecular Motors: Observations and Theory

Denis Le Bihan (Fall 2004)

Director, Federative Research Institute of Functional Neuroimaging Service Hospitalier Frédéric Joliot of the Commissariat à l'Energie Atomique, Orsay, France
From Physics to the Mind. An Imaging Quest

Richard L. Garwin (Spring 2004)

IBM Fellow Emeritus, IBM T.J. Watson Research Center
Fun with Muons

Freeman J. Dyson (Spring 2003)

Professor Emeritus, Institute for Advanced Study (Princeton)
Looking for Life in Unlikely Places: Reasons Why Planets May Not be the Best Places to Look for Life

Eric Cornell (Spring 2002)

Fellow, JILA and Professor Adjoint in Physics, The University of Colorado

Artifice and Equilibrium: Experiments with Synthetic and Natural Vortices in a Superfluid Gas

Yuval Ne'eman (Spring 2001)

Professor Emeritus of Physics, The University of Texas at Austin and Tel Aviv University

Why One Now Clearly Hears That "Music of the Spheres"

Leo P. Kadanoff (Spring 2000)

Professor of Physics, University of Chicago
Models of Structure and Pattern Formation

John N. Bahcall (Spring 1998)

Professor, Princeton University
What Have We Learned About Solar Neutrinos?

Albert James Hudspeth (Spring 1997)

Director, Laboratory of Sensory Neuroscience, Rockefeller University

How Hearing Happens: Mechano-electrical Transduction by Hair Cells of the Internal Ear

THE EMMETT L. HUDSPETH CENTENNIAL LECTURESHIP IN PHYSICS

JUN YE

JILA, National Institute of Standards
and Technology
and
University of Colorado

**QUANTUM COHERENCE,
ENTANGLEMENT, AND CLOCK:
FROM EMERGENT PHENOMENA TO
FUNDAMENTAL PHYSICS**

WEDNESDAY, NOVEMBER 16, 2022

4:00 P.M.

THE JOHN A. WHEELER LECTURE HALL
PMA 4.102

THE DEPARTMENT OF PHYSICS
THE UNIVERSITY OF TEXAS AT AUSTIN



Jun Ye is a Fellow of JILA, a Fellow of NIST, and a member of the National Academy of Sciences. His research focuses on the development of new tools for light-matter interactions and their applications in precision measurement, quantum science, and frequency metrology.

He has co-authored over 400 scientific papers and delivered 600 invited talks. Among his many awards and honors are N.F. Ramsey Prize (APS), I.I. Rabi Award (IEEE), I.I. Rabi Prize (APS), and W.F. Meggers Award (OSA).

His recent 2022 honors include Breakthrough Prize in Fundamental Physics, Niels Bohr Institute Medal of Honour, Herbert Walther Award, and Vannevar Bush Fellowship.

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Precise quantum state engineering, many-body physics, and innovative laser technology are revolutionizing the performance of atomic clocks and metrology, providing opportunities to explore emerging phenomena and probe fundamental physics.

Recent advances include measurement of gravitation time dilation across a few hundred micrometers, and employment of quantum entanglement generated with optical cavity quantum-electrodynamics, a field pioneered by Jeff Kimble.

The Emmett L. Hudspeth Centennial Lectureship in Physics is supported by an endowment donated by friends and associates of Emmett L. Hudspeth and matched by the endowed Teachers and Scholars Program.



Emmett L. Hudspeth
1916-2000

Born in 1916 in Denton, Texas, Emmett Leroy Hudspeth attended Rice University and earned his Ph. D. degree in 1940. He was a Fellow and later the Assistant Director of the Bartol Research Foundation and a staff member of the MIT Radiation Laboratory.

In 1950 he joined the Physics Department at the University of Texas and served for many years as Director of the Nuclear Physics Laboratory. He was Chairman of the Department and Graduate Advisor, and he supervised nearly thirty dissertations in nuclear physics and medical physics.

Dr. Hudspeth was a member of the American Association for the Advancement of Science and a Fellow of the American Physical Society. He had broad business experience and was the founder of two Austin-area corporations.

Published extensively in the field of experimental nuclear physics, Dr. Hudspeth was best known for his pioneering research on the energy levels and properties of light nuclei.