

# ICFO COLLOQUIUM MARC KASTNER 'Funding of Basic Science in the U.S. and the Special Role of Philanthropy'

MARC KASTNER

April 04, 2017

Tuesday, April 4, 12:00, ICFO Auditorium

**MARC KASTNER**

President, Science Philanthropy Alliance. Donner Professor of Physics Emeritus and former Dean of Science, MIT and Professor Emeritus, Department of Physics and Applied Physics, Stanford University$$

Marc Kastner is the president of the Science Philanthropy Alliance, a coalition of leading nonprofit institutions and foundations dedicated to increasing investment in basic science research. Prior to leading the Alliance, Kastner had a long career in research and teaching and a variety of senior positions at the Massachusetts Institute of Technology (MIT). Kastner joined MIT in 1973 and was named the Donner Professor of Physics in 1989. He became director of the Center for Materials Science and Engineering in 1993, head of the Department

of Physics in 1998 and dean of the School of Science in 2007; he stepped down as dean in 2013.

Kastner?s early research focused on the electronic and optical properties of amorphous semiconductors, especially chalcogenide glasses. He and collaborators invented the Valence-Alternation model that relates the electronic properties of these materials to their chemical bonding. Later, together with Robert Birgeneau, he studied the relationship of the magnetic properties of high temperature superconductors to their electronic transport and optical properties. In 1990 Kastner?s group fabricated the first semiconductor single-electron transistor, and in 1998 they discovered the Kondo effect in these nano-structures; the latter is a state in which electrons inside and outside the transistor are quantum mechanically entangled.

Kastner has served as chair of the Solid State Sciences Committee and as chair of the Board on Physics and Astronomy of the National Research Council. He has also served on the Science Advisory Boards of the National Cancer Institute and the Gordon and Betty Moore Foundation. Kastner is a member of the National Academy of Sciences, a fellow of the American Academy of Arts and Sciences, a fellow of the American Physical Society and the American Association for the Advancement of Science. In 1995, he received the David Adler Lectureship Award of the American Physical Society, and in 2000 he won the Oliver E. Buckley Prize of the American Physical Society. Kastner received a B.S. in chemistry, an M.S. in physics, and a Ph.D. in physics from the University of Chicago and was a postdoctoral fellow at Harvard University.

Federal funding of research and development (R&D) at higher education institutions in the U.S. has fallen by about 11% since 2011, representing the longest multiyear decline in federal funding for academic R&D since data collection began in 1972. What the government calls basic research has ostensibly done better than R&D as a whole, yet most scientists will tell you that agencies are demanding that research be more applied or translational. Philanthropy cannot fill the gap in federal funding, but there are things philanthropists can do that government finds difficult. I will discuss the trends in U.S. federal and philanthropic support for science, which led to the formation of the Science Philanthropy Alliance. I will explain the mission and strategy of the Alliance and our progress to date.

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