

## TOPICS & SPEAKERS

### **The Beginning and End of Time: Life, The Universe, and Nothing**

**Professor Lawrence M. Krauss**

*Case Western Reserve University*

Lawrence M. Krauss is Ambrose Swasey Professor of Physics, Prof of Astronomy, and Director of the Center for Education and Research in Cosmology and Astrophysics. Krauss received his PhD from MIT in 1982 and then joined the Society of Fellows at Harvard University. He was appointed to the faculty of physics and astronomy at Yale University in 1985, and then joined Case as Chair of Physics in 1993. The author of 7 popular books including international best-seller, *The Physics of Star Trek*, and the award winning, *Atom*, and his newest book, *Hiding in the Mirror: The Mysterious Allure of Extra Dimensions from Plato to String Theory and Beyond*, Krauss is also a regular radio commentator and essayist for newspapers such as the *New York Times*, and appears regularly on television. Krauss is one of the few well known scientists today described by such magazines as *Scientific American* as a public intellectual, and with activities including performing with the Cleveland Orchestra, he has also crossed the chasm between science and popular culture. At the same time he is a highly regarded international leader in cosmology and astrophysics, and is the author of over 200 papers, winner of numerous international awards for his research accomplishments and his writing (he is, for example, the only physicist to have been awarded the highest awards of the American

Physical Society, the American Association of Physics Teachers, and the American Institute of Physics) and is a Fellow of the American Physical Society, and the American Association for the Advancement of Science. He has been particularly active leading the effort by scientists to defend the teaching of science in public schools. His essay in the *New York Times* on Evolution and Intelligent Design in May 2005 helped spur the recent controversy that has involved the Catholic Church.

### **Two-Time Physics: The Unified View From Higher Dimensional Space and Time**

**Professor Itzhak Bars**

*University of Southern California, Los Angeles*

Itzhak Bars is a Professor of Physics at the University of Southern California, Los Angeles. He received his Ph.D. from Yale University in 1971 and after postdoctoral research at the University of California at Berkeley he was appointed to the faculty of Stanford University in 1973. He returned to Yale University in 1975 as a faculty member in the Physics Department, and after a decade he moved to the University of Southern California in 1984 to build a research group in High Energy Physics. He served as the director of the Caltech-USC Center for Theoretical Physics during 1999-2003. His visiting appointments include Harvard University, the Institute for Advanced Study in Princeton, and CERN in Geneva, Switzerland.

Professor Bars is a leading expert in symmetries in Physics, which he applies in much of his research on particle physics, field theory, string theory and mathematical physics in over 200 papers. He is the author of a book on "Quantum Mechanics" and co-editor of the books "Symmetry in Particle Physics" and "Strings '95, Future

Perspectives in String Theory". Some of his experimentally successful physics predictions include supersymmetry in large nuclei with even/odd numbers of nucleons, and the weak interaction contribution to the anomalous magnetic moment of the muon, in the context of the quantized Standard Model, that was confirmed after 30 years. His contributions to the mathematics of supersymmetry are extensively used in several branches of physics and mathematics.

His current interests include String Field Theory, and Two-Time Physics which he originated in 1998. In 2006 he established that all the physics we know today, as embodied in principle in the Standard Model of Particles and Forces, is better described by a two-time field theory in 4 space and 2 time dimensions projected as a shadow on an emergent 3 space and 1 time dimensions. His honors include Fellow of the American Physical Society, the First Award in the Gravity Research Foundation essay contest (shared with Chris Pope), Outstanding Junior Investigator Award by the Department of Energy, and the A. P. Sloan Foundation Fellowship.

## SYMPOSIUM AT A GLANCE

12:30 pm - 12:45 pm	Registration
1:00 pm - 2:00 pm	Two-Time Physics: The Unified View From Higher Dimensional Space and Time Professor Itzhak Bars
2:00 pm - 2:15 pm	Break
2:15pm - 3:15 pm	The Beginning and End of Time: Life, The Universe, and Nothing Professor Lawrence M. Krauss
3:15pm - 3:30 pm	Break
3:30pm - 4:30 pm	Q & A