



AMERICAN MUSEUM OF NATURAL HISTORY

HAYDEN PLANETARIUM
ISAAC ASIMOV
MEMORIAL DEBATE

**THE EXISTENCE
OF NOTHING**

WEDNESDAY, MARCH 20, 2013 | 7:30 PM
Samuel J. and Ethel LeFrak Theater

The late Dr. Isaac Asimov, one of the most prolific and influential authors of our time, was a dear friend and supporter of the American Museum of Natural History.

In his memory, the Hayden Planetarium is honored to host the annual Isaac Asimov Memorial Debate, generously endowed by relatives, friends, and admirers of Isaac Asimov and his work, bringing the finest minds in the world to the Museum each year to debate pressing questions on the frontier of scientific discovery.

Proceeds from ticket sales of the Isaac Asimov Memorial Debates benefit the scientific and educational programs of the Hayden Planetarium.

PREVIOUS DEBATES

- 2012 Faster than the Speed of Light
- 2011 The Theory of Everything....Still Searching?
- 2010 Rose Center 10th Anniversary Asimov Debate:
Is Earth Unique?
- 2010 Moon, Mars, and Beyond: Where Next
for the Manned Space Program?
- 2009 From Planets to Plutoids
- 2008 Mining The Sky
- 2007 The Pioneer Anomaly
- 2006 Universe: One or Many?
- 2005 The Enigma of Alien Solar Systems
- 2004 The Dark Side
- 2003 The Big Bang
- 2002 The Search For Life in the Universe
- 2001 The Theory of Everything

THE EXISTENCE OF NOTHING

The concept of nothing is as old as zero itself. How do we grapple with the concept of nothing? From the best laboratory vacuums on Earth to the vacuum of space to what lies beyond, the idea of nothing continues to intrigue professionals and the public alike.

PROGRAM

Welcome and Introduction

Opening Questions

Directed Debate Among Panelists

Questions from Audience

Adjournment

Book/Program Signing
in the Hall of Northwest Coast Indians

Join the conversation using **#AsimovDebate**

PANELISTS

J. RICHARD GOTT, III, professor of astrophysical sciences at Princeton, is a renowned cosmologist and general relativist. He discovered exact solutions to Einstein's field equations for the geometry around one cosmic string and around two moving cosmic strings, which could allow time travel to the past. His paper with Li-Xin Li, "Can the Universe Create Itself?" proposed the universe could have begun with a time loop. He has worked with Zachary Slepian on the behavior of Dark Energy and the ultimate fate of the universe. He is author of *Time Travel in Einstein's Universe* and *Sizing Up the Universe* (with Robert Vanderbei).

JIM HOLT is a longtime contributor to the *New Yorker*, where he has written on string theory, time, infinity, numbers, truth, and nonsense, among other topics. He is the author of "Why Does the World Exist? An Existential Detective Story" (2012) and "Stop Me If You've Heard This: A History and Philosophy of Jokes" (2008). He is currently working on a book about free will, weakness of will, self-deception, and happiness. He studied mathematics at the University of Virginia and did graduate work in philosophy at Columbia. His favorite things are ultrafilters, countable ordinals, and large cardinals.

LAWRENCE KRAUSS is director of the Origins Project and Foundation Professor in the School of Earth and Space Exploration and Physics Department at Arizona State University. An internationally known theoretical physicist with wide research interests, including the interface between elementary particle physics and cosmology. Krauss is the author of over 300 scientific publications, as well as many popular articles on physics and astronomy for magazines and newspapers. In addition he is frequently on radio and television, and is the subject of an upcoming documentary feature film, *The Unbelievers*. His many popular books include *Atom: An Odyssey from the Big Bang to Life on Earth...and Beyond* (2001), and the international *New York Times* bestsellers *The Physics of Star Trek* (1995) and *A Universe From Nothing: Why There is Something Rather than Nothing* (2012).

CHARLES SEIFE, a professor of journalism at NYU's Arthur L. Carter Journalism Institute, has been writing about physics and mathematics for almost two decades. Before arriving at NYU, Seife was a writer for *Science* magazine and had been a U.S. correspondent for *New Scientist*. His writing has also appeared in *The Economist*, *Scientific American*, *The Philadelphia Inquirer*, *Discover*, *Slate*, *Smithsonian*, *The Washington Post*, *The New York Times*, and numerous other publications. He is also the author of five books, including *Zero: The Biography of a Dangerous Idea* (2000); *Alpha & Omega: The Search for the Beginning and End of the Universe* (2003); and *Proofiness: The Dark Arts of Mathematical Deception* (2010).

EVA SILVERSTEIN is a professor of physics at Stanford University and the SLAC National Accelerator Laboratory. Dr. Silverstein's major contributions include predictive new mechanisms for inflationary cosmology, which helped motivate a more systematic understanding of the process and the role of UV-sensitive quantities in observational cosmology; mechanisms for singularity resolution in string theory; a novel duality in string theory between extra dimensions and negative curvature; extensions of the AdS/CFT correspondence to more realistic field theories (with applications to particle physics and condensed matter model building) and to landscape theories; and simple mechanisms for stabilizing the extra dimensions of string theory. She is a former MacArthur Fellow and past recipient of a Sloan Research Fellowship.

HOST AND MODERATOR

NEIL DeGRASSE TYSON is an astrophysicist with the American Museum of Natural history, where he also serves as the Frederick P. Rose Director of the Hayden Planetarium. Born and raised in New York City, Tyson attended the Bronx High School of Science and later earned his B.A. in Physics from Harvard and his Ph.D. in Astrophysics from Columbia. He has been an advisor to NASA and to three U.S. Presidents on matters related to space exploration. Tyson has been awarded 18 honorary doctorates, has an asteroid (13123Tyson) named after him, and is frequently consulted by print and broadcast media for his views on cosmic discovery. In addition to professional publications, Tyson has written ten books, the most recent of which is the New York Times best-seller *Space Chronicles: Facing the Ultimate Frontier* (2012).

UPCOMING HAYDEN PROGRAMS

ASTRONOMY LIVE

6:30 pm | Hayden Planetarium Space Theater
\$15 (\$13.50 Members, students, and seniors)

This monthly program offers an interactive tour of the universe and a view of the constantly changing night sky. Learn about what is visible in our nighttime sky with the brilliant stars of the Zeiss Mark IX star projector or travel to the edge of the observable universe with the world's largest cosmic atlas, assembled at the Hayden Planetarium. Please see monthly descriptions for details.

SPRING SKIES: A COMET IS COMING

Tuesday, March 26

Most comets – those dazzling, mysterious visitors from the depths of space – turn out to be unimpressive sky objects, but in July 2011, astronomers in Hawaii using a special robotic telescope found a comet, which shows some promise to put on a good show during March 2013. **Joe Rao** will talk about the historical and scientific importance of comets and then, using the Zeiss IX projector, show just where to look for the new comet PANSTARRS.

HUBBLE AND FRIENDS: NASA'S GREAT SPACE OBSERVATORIES

Tuesday, April 30

Hubble may be the best-known space telescope, but did you know NASA has launched over twenty to explore the Universe? This presentation by astrophysicist **Emily Rice** will explore the discoveries of Hubble's friends, old and new, from the Orbiting Astronomical Observatories of the 1960s and 1970s to the James Webb Space Telescope, slated to launch in 2018.

ASTRONOMICAL PHENOMENA REVEALED!

Tuesday, May 28

What types of astronomical phenomenon are observable from Earth? In this program, Museum research scientist **Jackie Faherty** uses the power of the dome's Zeiss IX Projector and the Museum's Digital Universe Atlas to simulate numerous exciting celestial phenomena that you should be able to see in your lifetime. From transits of the inner planets, to partial and total solar and lunar eclipses simulations will reveal what you should expect and when you can expect to see them.

FRONTIERS LECTURE SERIES

7:30 pm | Hayden Planetarium Space Theater
\$15 (\$13.50 Members, students, senior citizens)

Our FRONTIERS Lecture Series is designed to bring the latest advances in our knowledge of the Universe to our audience. To accomplish this, we bring in the scientists working at the cutting edge of the field to present their research to the public.

THE CORE OF THE MOON

Monday, April 8

A key unknown in lunar science is to what extent the Moon is a melted, radially layered planet like the Earth or a primordial un-melted relic of the early solar system like many asteroids. Did the Moon form a metallic core and an ancient magnetic field? A new era of intensive lunar exploration is underway which is providing major new insights into this decades-old question. **Ben Weiss**, of the Massachusetts Institute of Technology will review our current understanding of the lunar interior by synthesizing new results from spacecraft observations and studies of Apollo samples.

CURIOSITY'S MISSION AT GALE CRATER, MARS

Wednesday, May 8

The successful August 5, 2012 landing of the *Curiosity* rover on the surface of Mars represents an unprecedented achievement. The most complex spacecraft ever to land on the surface of another planet was the result of bold science vision (search for habitable environments), coupled with extraordinary engineering (how to successfully land a one-ton SUV-sized vehicle). **John Grotzinger**, the project scientist for the Curiosity mission, presents highlights.

BRILLIANT BLUNDERS

Monday, June 10

Even the greatest scientists have made serious blunders. Join **Mario Livio** as he analyzes major errors committed by such giants as Charles Darwin, Lord Kelvin, Linus Pauling, Fred Hoyle, and Albert Einstein. Scrutinize the various types of blunders and attempt to identify their psychological causes. He will discuss how blunders are not only inevitable – but are an essential part of progress in science.



For information on Hayden Planetarium
and other Museum programs and tickets
call 212-769-5200 or visit
amnh.org/calendar

Hayden Planetarium
haydenplanetarium.org

Department of Astrophysics
research.amnh.org/astrophysics

Rose Center for Earth and Space
amnh.org/rose
212-769-5900

Hayden Planetarium's Night Sky Q&A Hotline
212-769-5901

To add your name to the Hayden Planetarium's
StarStruck e-list for sky phenomena
and Hayden events, visit our website
amnh.org/email