



Physicist and Author

Prof. Lawrence M. Krauss is Ambrose Swasey Professor of Physics, Professor of Astronomy, and Chair of the Physics Department at Case Western Reserve University. He is an internationally known theoretical physicist with wide research interests, including the interface between elementary particle physics and cosmology, where his studies include the early universe, the nature of dark matter, general relativity and neutrino astrophysics.

He received his Ph.D. in Physics from the Massachusetts Institute of Technology in 1982 then joined the Harvard Society of Fellows. In 1985 he joined the faculty of Physics at Yale University, and moved to take his current appointment in 1993. He is a Fellow of the American Physical Society and of the American Association for the Advancement of Science.

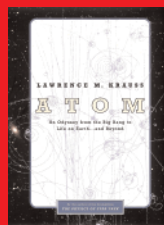
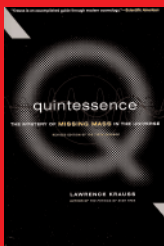
Prof. Krauss is the author of over 180 scientific publications, as well as numerous popular articles on physics and astronomy. In addition, he is the author of six popular books, including the national best-seller, The Physics of Star Trek, and his most recent book Atom: An Odyssey from the Big Bang to Life on Earth...and Beyond. He has lectured to popular audiences at such places as the Smithsonian Air and Space Museum, the National Museum of Natural History, and the Museum of Natural History in New York, as well as serving on the boards of three different science and natural history museums, and appears frequently on radio and television around the world.

Prof. Krauss is the recipient of numerous awards for his research, writing, and lecturing. These include the Gravity Research Foundation First Prize Award (1984), and the Presidential Investigator Award (1986). In February 2000, in Washington D.C., Prof. Krauss was awarded the American Association for the Advancement of Science's 1999-2000 Award for the Public Understanding of Science and Technology, joining previous awardees Carl Sagan (1995) and E.O.Wilson (1994). In April 2001, he received the Julius Edgar Lilienfeld Prize of the American Physical Society. The citation reads "For outstanding contributions to the understanding of the early universe, and extraordinary achievement in communicating the essence of physical science to the general public". In April 2001 the American Institute of Physics announced that Krauss had been awarded the 2001 Andrew Gemant Award, given annually to "a person who has made significant contributions to the cultural, artistic, or humanistic dimensions of physics". Previous awardees include Freeman Dyson, Steven Weinberg, and Stephen Hawking. In 2002 Krauss was awarded the American Institute of Physics Science Writing Award, for his book, "Atom". In June of 2003 he was awarded an honorary D.Sc. degree from Carleton University for his scientific contributions and his efforts to improve public understanding of science. In August of 2003 it was announced that Krauss had been awarded the [Oersted Medal](#), the highest award of the [American Association of Physics Teachers](#), for his contributions to the teaching of physics. Previous awardees include Richard Feynman, I.I. Rabi, Edward Purcell, and Hans Bethe.

www.phys.cwru.edu/~krauss

The Physics of Star Trek

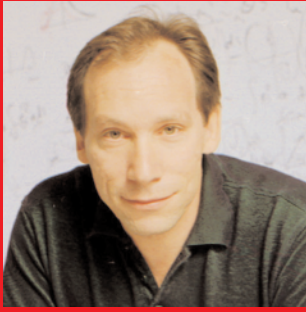
Beginning with a Bang, internationally known physicist Lawrence Krauss will guide you on a warp speed journey through the Star Trek universe, which he uses as a launching pad to offer a glimpse of the fascinating world of modern physics. Through the use of slides, props and video clips, as well as



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wit and charm, the author of *The Physics of Star Trek* will deal with topics ranging from time travel to warp speed, from the Big Bang to the search for extra-terrestrial intelligence.

The lecture will also feature selections from his *Top Ten Physics Bloopers* from the series, gleaned in part from many of the most distinguished physicist-trekkers in the world. Krauss is a seasoned lecturer and author with vast experience communicating his joy of physics to popular audiences. For Trekkers and non-Trekkers alike, this charming and accessible lecture will add a whole new dimension to your view of the Star Trek universe, and your appreciation of the universe in which we actually live.

Einstein's Biggest Blunder? A Cosmic Mystery Story

In 1915 Einstein completed his greatest triumph, the General Theory of Relativity. This remarkable theory laid the basis not just for our understanding of the motion of objects within the Universe, but the motion of the universe itself! Yet, in 1916, it looked as if Einstein's theory did not properly account for observations of the universe on large scales. To resolve this problem, he added an additional term to his equations, the so-called "Cosmological Constant".

Within a decade however, observations indicated that such a term was not necessary to obtain agreement with observations, and Einstein called this addition his "biggest blunder".

Over the past decade, new observations have led to a revolution in cosmology. The standard model of cosmology built up over a 20-year period up until the early 1990's is now dead. Its replacement may be far more bizarre. In particular, new data from a wide variety of independent cosmological and astrophysical observations, combine together to strongly suggest most of the energy density of the universe today may be contained in empty space! Remarkably, this is exactly what one would expect if Einstein's Cosmological Constant really exists! If it does, its origin is the biggest mystery in physics. I will close by briefly describing possible implications for our understanding of nature, and for life, of this astounding new result.

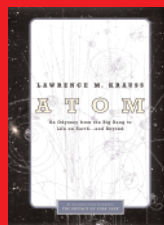
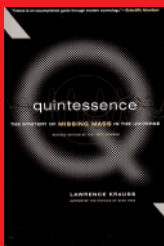
Science, Non-Science, and Nonsense: From Aliens to Creationism

In March of 1996, the U.S. Presidential candidate Pat Buchanan said on national television that he wasn't descended from apes, and he didn't think children should be taught that they are.

Not a single U.S. journalist questioned him on this position. In 1999 the Kansas School Board removed evolution and discussions of the Big Bang from its curriculum, in spite of the fact that these are not controversial scientific issues. In 2002, the State of Ohio is considering introducing the concept of Intelligent Design into the high school biology curriculum, in spite of the fact that this concept does not appear in the scientific literature.

Lawrence Krauss will explore examples from the news, advertisements, TV shows and movies, as well as from his books, to discuss the difference between science and fiction and to explore how the distinction between sense and nonsense is becoming blurred in popular discourse. He will also address the important issue of what science is, and what it is not.

The lecture will be part "tour" through the fascinating world of modern physics, part fun-filled examination of video clips, and part sober discussion of the various dangers facing modern society if we fail to learn the lessons science has taught us about the world. We must not be timid about offending sensibilities when those sensibilities are based on nonsense. *Life, The Universe, and Nothing: Life and*



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Death in an Ever-Expanding Universe.

What is the future of the Universe, and the future of life within it? Lawrence Krauss explains why the Universe we appear to inhabit is the worst of all possible universes, as far as considerations of the quality and quantity of life is concerned. Fundamental aspects of the way in which we teach cosmology, in particular the relation between geometry and destiny, have been altered by the recognition that the cosmological constant may not be zero. Finally, he addresses the fascinating question of whether life might be eternal in an eternally expanding universe. The answer to this question appears to hinge on issues of basic physics, in particular on issues of quantum mechanics and computation, which may determine whether life is ultimately analogue or digital.

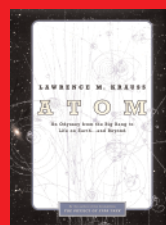
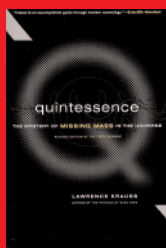
An Atom from....

We are all star children. Every atom in our bodies is likely, at least once and probably many times, to have been inside the fiery inferno of an exploding star. Moreover, while our nature compels us to think of our own experience as the defining feature of existence, it is not. All the while, the fundamental protagonists in the drama of life are the very atoms that make up our bodies. They may experience what we all desire: a chance at immortality. This lecture will trace the biography of a single atom—one that will be in a glass of water sitting on the stage at the beginning of the lecture—from the beginning of the Universe, before atoms themselves existed, until the end, as we currently envisage it. In between our atom experiences myriad tragedies and miraculous accidents as it weaves its way through the cosmos, through the earth, and through our own bodies. Its story will also lead us to confront some of the most exciting new discoveries as well as the greatest outstanding puzzles in physics, cosmology, geology, and biology, as well as some lessons about our own place in the Universe. Scientific Ignorance as Way of Life: From Washington to the Classroom

We are living in dangerous times. Science is under attack in many areas of our society, from an administration that systematically censors, distorts, or ignores the results of science, to public school systems that are contemplating replacing sound science with pseudoscience or religion. Lawrence Krauss has been at the front lines of the battlefield in the war against scientific ignorance, and gives a report from front line.

“Lawrence Krauss has Carl Sagan’s knack of expanding the imagination and explaining the mysteries of the universe in simple terms”

Stephen Hawking



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