

**A VIEW FROM THE CENTER OF THE UNIVERSE**

*Discovering Our Extraordinary Universe*

**By Joel R. Primack & Nancy Ellen Abrams**

**Riverhead Books**

**Publication Date: April 6, 2006**

**Contacts:**

**SallyAnn McCartin**

**212-929-8089 or 860-465-6464**

**&**

**Stephanie Sorensen**

**Co-Director of Publicity**

**212-366-2576**

# **About Joel R. Primack & Nancy Ellen Abrams**

Joel R. Primack and Nancy Ellen Abrams are married and have unusually complementary viewpoints. Joel R. Primack is one of the world's leading cosmologists. Nancy Ellen Abrams is a writer and lawyer with a background in the history and philosophy of science, who has worked as a science-interpreter for governments. She has for over two decades closely followed Joel's work, discussed it with him daily, attended countless astrophysics conferences, and talked to almost everyone in the field. Together they have developed and taught a prize-winning course at the University of California, Santa Cruz, called Cosmology and Culture.

See full biographical information on following pages.

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## Biography of Joel R. Primack

Joel R. Primack, Professor of Physics at the University of California, Santa Cruz, specializes in the formation and evolution of galaxies and the nature of the dark matter that makes up most of the matter in the universe. Primack received his A.B. from Princeton in 1966 and his Ph.D. from Stanford in 1970. He was then a Junior Fellow of the Society of Fellows of Harvard University. After helping to create what is now called the “Standard Model” of particle physics, Primack began working in cosmology in the late 1970s and he became a leader in the new field of particle astrophysics. He is one of the principal originators and developers of the theory of Cold Dark Matter, which has become the basis for the standard modern picture of structure formation in the universe. With support from the National Science Foundation, NASA, and the Department of Energy, he uses supercomputers to simulate and visualize the evolution of the universe under various assumptions, and compare the predictions of these theories to the latest observational data. Primack was made a Fellow of the American Physical Society (APS) in 1988 “for pioneering contributions to gauge theory and cosmology.” He served on the Executive Committee of the APS Division of Astrophysics 2001-2002. He has won awards for his research from the A. P. Sloan Foundation and the Alexander von Humboldt Foundation.

Dr. Primack’s research in cosmology is described in most modern books on the subject, and he has been profiled at some length in several books including *New York Times* science writer Dennis Overbye's *Lonely Hearts of the Cosmos* and *Time* magazine science editor Michael Lemonick’s *The Light at the Edge of the Universe*. Primack is also frequently interviewed by reporters for print and broadcast media. He was one of the main advisors for the Smithsonian Air and Space Museum's 1996 IMAX film *Cosmic Voyage*. In addition to more than 200 technical articles in professional journals, Primack has written a number of articles aimed at a more popular audience. These include the articles on “gravitation,” “matter,” “dark matter,” “dark energy,” and other physics and astronomy topics in the *World Book Encyclopedia*, and articles in publications such as *Astronomy*, *Beam Line*, *California Wild*, *Sky and Telescope*, and in the *McGraw-Hill Encyclopedia of Science* and the *Encyclopedia of Astronomy and Astrophysics*.

Primack shared the APS Forum on Physics and Society Award in 1977 with Frank von Hippel of Princeton for their book *Advice and Dissent: Scientists in the Political Arena* (Basic Books, 1974; New American Library, 1976). In 1995 Primack was made a Fellow of the American Association for the Advancement of Science (AAAS), “for pioneering efforts in the establishment of the AAAS Congressional Science Fellows Program and for dedication to expanding the use of science in policymaking throughout government.” He has served on the board of the Federation of American Scientists and was a founder of the Union of Concerned Scientists. His most recent science policy work has been on efforts to protect the near-Earth space environment; his popular articles on this have appeared in *Bulletin of the Atomic Scientists*, *Science*, *Scientific American*, and *Technology Review*. He was a member of the APS Panel on Public Affairs 2002-2004, and is currently chair of the APS Forum on Physics and Society. He has also served as an advisor to and participant in the Science and the Spiritual Quest project, and as chairman of the advisory committee for the AAAS Program of Dialogue on Science, Ethics, and Religion 2000-2002.

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## Biography of Nancy Ellen Abrams

Nancy Ellen Abrams received her B.A. in the history and philosophy of science from the University of Chicago, her J.D. from the University of Michigan, and a diploma in international law from the Escuela Libre de Derecho in Mexico City. She was a Fulbright Scholar and a Woodrow Wilson Designate. She is a writer whose work has appeared in journals, newspapers, and magazines, such as *The Bulletin of the Atomic Scientists*, *Environment*, *California Lawyer*, *Science and Global Security*, and *Tikkun*. She has a long-term interest in the role of science in shaping a new politics and has worked in this area for a European environmental think tank in Rome, the Ford Foundation, and the Office of Technology Assessment of the U.S. Congress, where she co-invented (with R. Stephen Berry of the National Academy of Sciences) a novel procedure called “Scientific Mediation.” This procedure permits government agencies to make intelligent policy decisions in areas where the relevant science is crucial yet controversial. Scientific Mediation aims not to resolve scientific disputes, which can only be done by scientific research, but to make the essence of the disputed issue transparent to the non-scientists making the actual policy decision. She has consulted on its use for the state governments of California and Wisconsin, private corporations and organizations, and the government of Sweden, where Scientific Mediation has become standard procedure in the Ministry of Industry. With Joel R. Primack, she co-authored a prize-winning article on quantum cosmology and Kabbalah, as well as numerous articles on science policy, space policy, and cultural implications of modern cosmology. Recent ones are posted on their website, <http://physics.ucsc.edu/cosmo/primackabrams.html>.

Abrams is also a songwriter who has performed at conferences, concerts, and events in eighteen countries, released three albums, and been featured on National Public Radio and television. *New York Times* science writer Dennis Overbye’s bestseller, *Lonely Hearts of the Cosmos*, describes her songs, includes a photo of her with Joel, and closes with the complete lyrics to a song she wrote for and performed at the 1986 Nearly Normal Galaxies conference, one of many major astronomy conferences where she has performed. The late Senator Paul Wellstone used lyrics from another of Nancy’s songs as chapter headings in his book *Powerline*. Several of the songs on her 2002 album, *Alien Wisdom*, explore themes from *The View from the Center of the Universe* (see her website, [www.expandinguniverse.org](http://www.expandinguniverse.org)).

Abrams has been intrigued by science’s border with myth since studying with Mircea Eliade at the University of Chicago. She works as a scholar to put the discoveries of modern cosmology into a cultural context and as a writer and artist to communicate their possible meanings at deeper level. “Cosmology and Culture,” the course she and Joel developed and have co-taught since 1996 at the University of California, Santa Cruz, has received awards from both the Templeton Foundation and the American Council of Learned Societies. Abrams and Primack’s co-written articles have appeared in books and magazines including *Astronomy Now*, *Philosophy in Science*, *Science*, *Science & Spirit*, *Spirituality and Health*, and *Tikkun*.

Over the past ten years, they have given many invited talks on themes from *The View from the Center of the Universe* not only at universities but at planetariums, cultural centers, conferences, churches, and synagogues. Their talks are multimedia presentations, in which Joel

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presents new cosmological ideas and Nancy discusses their meaning and relevance, performs her own songs, and sometimes leads the audience in guided contemplations to help them visualize the ideas. In their attempt to bring science to the public, they have spoken at venues from the State of the World Forum in New York and the Senate Chamber of France to the North American Montessori Teachers Association and the Cornelia Street Café in New York City.

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