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**Oppenheimer lecture presents eternity in an hour**  
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There are some great snapshots of the heavens, but not many multi-dimensional voyages to the edge of the known universe. Joel Primack's panoramic scientific appreciation of the intricate immensity of the cosmos was more than a faster-than-light cruise into the glittering light of glory. It was also a passionate defense of humanity's place in an infinite world and a confident summation of all that we have figured out so far.

Primack, a professor of physics at the University of California, Santa Cruz, gave the prestigious J. Robert Oppenheimer Lecture Monday night to a large audience in the Duane Smith Auditorium.

Right or wrong, Primack boldly waded into oceanic progress that has been made in our understanding of the universe.

Integrating Einstein's theory of relativity with classical and quantum mechanics is beginning to pay off, especially in the light of centuries of ever more precise observation of the structure and evolution of the universe.

In many ways, the one-hour summary was even more impressive than the book, "The View from the Center of the Universe," that Primack co-wrote with his wife Nancy Abrams, if only because the experience of holding "the universe in the palm of your hand" was so immediate and intense.

That humans are central and special unites the related frames and symbols the couple has chosen to view the 14 billion years of cosmic history and make projections about billions of years to come.

Having made our appearance at the half-way point in the life of our sun means we have options and work to do before it becomes an unbearably hot red-giant.

Halfway through the oxygen- and water-rich, human-friendly phase of our Earth, we have another 500 million years to make some major adjustments to avoid losing our biosphere.

Primack proposed harnessing a meteor to draw us slowly away from the increasing heat. "Very carefully," we could modify our planet's orbit with some astro-engineering.

"That could prolong the pleasant period on earth by 4 billion years," he said.

Finally, Primack suggests, we live at a time in human history when our population expansion, resource consumption and carbon emissions are approaching capacity.

Our problems may be urgent. We have reached the point that we are beginning to sober up, he said, "but it's not too late to solve them."

"[W]e have an extraordinary opportunity that has arisen only twice before in the history of Western civilization - the opportunity to see everything afresh through a new cosmological lens," Primack and Abrams wrote in their book.

Only a deeply informed awareness of our pivotal place and role in the universe can give us the motivation and inner resources to change, the couple has suggested by their words and actions.

Primack's hallmark is that he knows and has made fundamental contributions to the architecture of modern cosmology and turns his comprehensive grasp to practical use.

While some astronomers lament the picture of an accelerating expansion leading to dissipation and extinction in a trillion years or so, Primack celebrates our place in cosmic time that enables us to see not only back to what we came from - but also forward toward the end when our galaxy will have merged with others in our local cluster and stand alone under a darkening sky.

"The fact that the universe is going to die makes it all the more precious," he said after the lecture, at the traditional potluck and champagne reception at Fuller Lodge.

The J. Robert Oppenheimer Memorial Committee, which also awards a number of scholarships to area high school students, sponsors the annual event. Leon Heller, chair of the committee, introduced the students before the talk and presented a medal to the speaker afterward. Astrophysicist Salman Habib of Los Alamos National Laboratory's Theoretical Division introduced the speaker.