

THE UCR CENTER FOR EXPERIMENTAL COSMOLOGY & INSTRUMENTATION PRESENTS:

# FRONTIERS OF COSMOLOGY LECTURE

## Waves are Everywhere: How Oscillations Shape Technology, Earth, and the Universe

Waves permeate the universe. Sound and light allow us to perceive distant events, while seismic, ocean, and atmospheric waves reveal the dynamic Earth. The most violent phenomena in the cosmos announce themselves through gravitational waves rippling across spacetime. At smaller scales, quantum and electromagnetic waves form the foundation of nearly all modern technology, from communications and computing to energy.

The unification of electricity, magnetism, and light by James Clerk Maxwell stands as one of the most profound achievements in physics—an insight so powerful that it can be seen as a twentieth-century discovery arriving early, in the nineteenth century. Today, wave physics continues to advance. New classes of waves, rooted not in traditional material properties but in the mathematics of topology, are being discovered in laboratories and observed in the natural world.

This lecture will explore how waves connect phenomena across vast ranges of scale, how they have transformed technology and science, and how emerging topological waves may point toward discoveries still to come.

Featuring introductory remarks by  
UCR Provost Elizabeth Watkins,  
CNAS Dean Peter Atkinson, and  
2017 Nobel Laureate Prof. Barry Barish

This event is free and open to the  
public. The local community, and  
middle and high school students, are  
strongly encouraged to attend.



Special Speaker:  
**Brad Marston**

*Professor of Physics, Brown University  
President of the American Physical Society*

**UC RIVERSIDE** | Physics & Astronomy



Thursday, February 26th  
UCR University Lecture Hall  
5:00 PM: Reception  
6:00 PM: Lecture

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