Department of Physics
Arizona State University

COLLOQUIUM

Thursday, August 25th, 2022

Refreshments at 3:45pm in PSF 186

Colloquium from 4:00 PM – 5:00 PM in PSF 101

Three Ways to Build a Spacetime

Professor Cindy Keeler

Arizona State University

Abstract:

How is spacetime built? What is it built from? What can asking these questions tell us about the nature of black holes, the beginnings of our universe, or the nature of quantum gravity? After a brief review of the nature and use of dualities in modern string theory and quantum gravity, we explore three approaches to theoretically constructing spacetime itself: entanglement entropy, quasinormal modes, and the "double copy" prescription. We discuss how these approaches provide new theoretical and physical windows into the nature of spacetime.

Biography:

Dr. Keeler graduated from Stanford University in 2003 with a B.S. in Physics and Mathematics. She then studied at University of California at Berkeley, earning her M.A. in Physics in 2006. Continuing at Berkeley, she received an NSF Graduate Research Fellowship in 2005, and her Ph.D. in Physics in 2008. She then held postdoctoral appointments at Harvard University's Center for the Fundamental Laws of Nature, the University of Michigan, and finally at the Niels Bohr Institute at Copenhagen University. She was a Marie Skłodowska-Curie Fellow from 2015 to 2017. She joined ASU’s physics department as an Assistant Professor in 2017.

Dr. Keeler's research investigates holographic gauge-gravity dualities, including how the boundary theory reconstructs the bulk spacetime, the role played by quasinormal modes, and its relationship to the "double copy" prescription.

Host: Prof. Cecilia Lunardini

View our Fall 2022 Physics Colloquium schedule at https://physics.asu.edu/colloquia