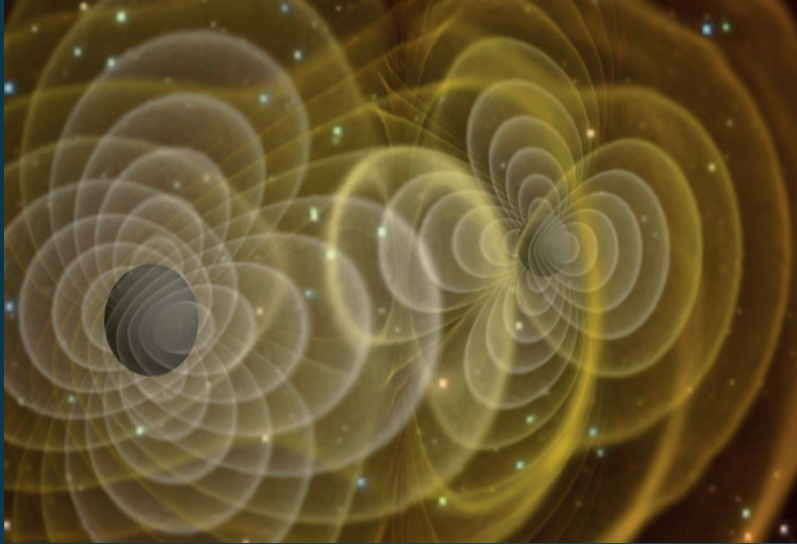


Cosmic Collisions Reveal Einstein's Gravitational-Wave Universe

6th Annual F. K. Edmondson Astronomy Public Lecture



Professor Vicky Kalogera
Northwestern University

Wednesday January 30, 7:30pm
Swain West 119



For the first time, scientists have observed ripples in the fabric of spacetime called gravitational waves, arriving at the earth from cataclysmic events in the distant universe. These recent observations confirm a major prediction of Albert Einstein's 1915 general theory of relativity and open an unprecedented new window onto the cosmos. Gravitational waves carry unique information about their dramatic origins and about the nature of gravity that cannot otherwise be obtained. Detected gravitational waves were produced during the final fraction of a second of the mergers of two black holes but also during the last hundred seconds of the collision of two neutron stars. The latter is the first ever cosmic event to be observed both in gravitational waves and in electromagnetic waves, shedding light to several long-standing puzzles, like the production of gold in nature and the physics origins of brief gamma-ray flashes. I will review the beginnings of this exciting field of cosmic exploration and the unprecedented technology and engineering that made it possible.

Professor Vicky Kalogera

Northwestern University

Vicky Kalogera is the co-founder and the current director of the Center for Interdisciplinary Exploration and Research in Astrophysics (CIERA) and the Daniel I. Linzer Distinguished University Professor in the Department of Physics and Astronomy in the Weinberg College of Arts and Sciences at Northwestern. Kalogera is the lead astrophysicist in the LIGO Scientific Collaboration (LSC), LIGO being the telescopes that first detected gravitational waves in 2015. An expert in the astrophysics of black holes and neutron stars and in LIGO data analysis, Kalogera has been a member of the LSC for more than 15 years, and was elected a member of the US National Academy of Sciences in 2018. Kalogera also studies the formation and evolution of stars and their remnants detectable as gamma-ray, X-ray, and radio pulsar sources in the electromagnetic spectrum in a wide range of stellar environments. For her research she has been recognized by numerous awards; most recently she was awarded the 2018 Heineman Prize for Astrophysics by the American Institute for Physics and the American Astronomical Society.

Kalogera received her B.S. in Physics in 1992 from the University of Thessaloniki in Greece and her Ph.D. in Astronomy in 1997 from the University of Illinois at Urbana-Champaign. She then joined the Harvard-Smithsonian Center for Astrophysics as a CfA Postdoctoral Fellow and in 2000 she was awarded the inaugural Clay Postdoctoral Fellowship. Prof. Kalogera is the co-founder and the current director of the Center for Interdisciplinary Exploration and Research in Astrophysics (CIERA) and the Daniel I. Linzer Distinguished University Professor in the Department of Physics and Astronomy in the Weinberg College of Arts and Sciences at Northwestern.

Previous Edmondson Lecturers:	2017 Wendy Freeman	2014 Martha Haynes
	2016 Josh Winn	2013 David Morrison
	2015 Kathryn Johnston	



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The annual F. K. Edmondson Astronomy Public Lectures were established to honor the memory of Professor Frank Kelly Edmondson, a faculty member of the Department of Astronomy at Indiana University from 1937 until his retirement in 1983, and as Chair of the Department from 1944 until 1978. Professor Edmondson is remembered not only for his contributions to the study of asteroids through the Indiana Asteroid Program, but also for his dedication and service to Indiana University and to the astronomical community. The Edmondson Lectures are endowed in honor of Professor Edmondson by his family and friends.