HOW TO TAKE A PHOTO OF A BLACK HOLE

EHT IMAGE OF THE SUPERMASSIVE BLACK HOLE AT THE CENTER OF GALAXY M87. THE FLOW LINES TRACE THE MAGNETIC FIELDS THAT THREAD THE EMISSION REGION NEAR THE EVENT HORIZON.

BLACK HOLES are cosmic objects so small and dense, that nothing, not even light can escape their gravitational pull. Until recently, no one had ever seen what a black hole actually looked like. Einstein's theories predict that a distant observer should see a ring of light encircling the black hole, which forms when radiation emitted by infalling hot gas is lensed by the extreme gravity near the event horizon. The Event Horizon Telescope (EHT) is a global array of radio dishes, linked together by a network of atomic clocks to form an Earth-sized virtual telescope that can resolve the nearest supermassive black holes where this ring feature may be measured. On April 10th, 2019, the EHT project reported success: we have imaged a black hole, and have seen the predicted strong gravitational lensing that confirms the theory of General Relativity at the boundary of a black hole. In 2022, our team again saw this phenomenon towards the supermassive black hole at the center of our Milky Way galaxy. This talk will cover the history of black holes, how the EHT was developed and what we've learned so far (and hope to learn) about these mysterious objects.

8:00 P.M.
APRIL 22, 2025

Ring Family Performing Arts Hall, Wesleyan University

RECEPTION AND TELESCOPE VIEWING AT THE VAN VLECK OBSERVATORY TO FOLLOW THE LECTURE.

PHOTO CREDIT: BRIGITTE LACOMBE

DR. SHEPERD DOELEMAN
Center for Astrophysics I Harvard & Smithsonian and Event Horizon Telescope (EHT) Founding Director

Dr. Sheperd S. Doeleman is an Astrophysicist at the Center for Astrophysics | Harvard & Smithsonian and the Director of the Event Horizon Telescope (EHT), a synchronized global array of radio observatories designed to examine the nature of black holes. Shep Doeleman is also a Harvard Senior Research Fellow and a Project Co-Leader of Harvard's recently established Black Hole Initiative (BHI). The BHI is a first-of-its-kind interdisciplinary program at the University that brings together the disciplines of Astronomy, Physics, Mathematics, Philosophy, and History of Science to define and establish black hole science as a new field of study.

Wesleyan University

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THE 2025 STURM MEMORIAL LECTURE