



BLACK HOLES

THE EDGE OF ALL WE KNOW

A film by Peter Galison

Contact:

Director/Producer: Peter Galison, galisonasst@fas.harvard.edu

Editor/Co-Producer: Chyld King, info@blackholefilm.com

Distribution: Submarine Entertainment, info@submarine.com

Media: TheEdge@FalcoInk.com

Online:

www.blackholefilm.com

Runtime:

98 min



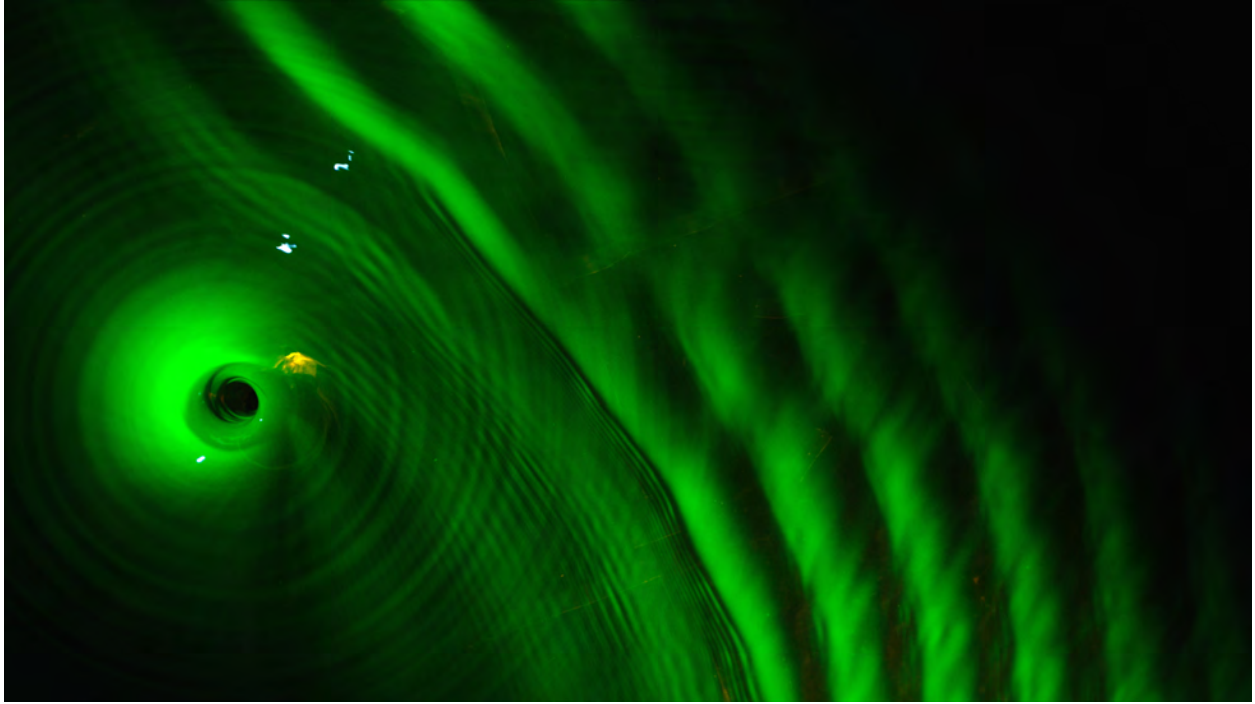
About the Film

Logline

Black holes stand at the edge of the knowable universe. The Event Horizon Telescope pursues the first picture of a black hole; Stephen Hawking and collaborators attack the black hole paradox at the heart of physics. *Black Holes | The Edge of All We Know* follows observers, theorists, and philosophers hunting these most mysterious objects.

Synopsis

What can black holes teach us about the boundaries of knowledge? These holes in spacetime are the darkest objects and the brightest—the simplest and the most complex. With unprecedented access, *Black Holes | The Edge of All We Know* follows two powerhouse collaborations. Stephen Hawking anchors one, striving to show that black holes do not annihilate the past. Another group, working in the world's highest altitude observatories, creates an earth-sized telescope to capture the first-ever image of a black hole. Interwoven with other dimensions of exploring black holes, these stories bring us to the pinnacle of humanity's quest to understand the universe.

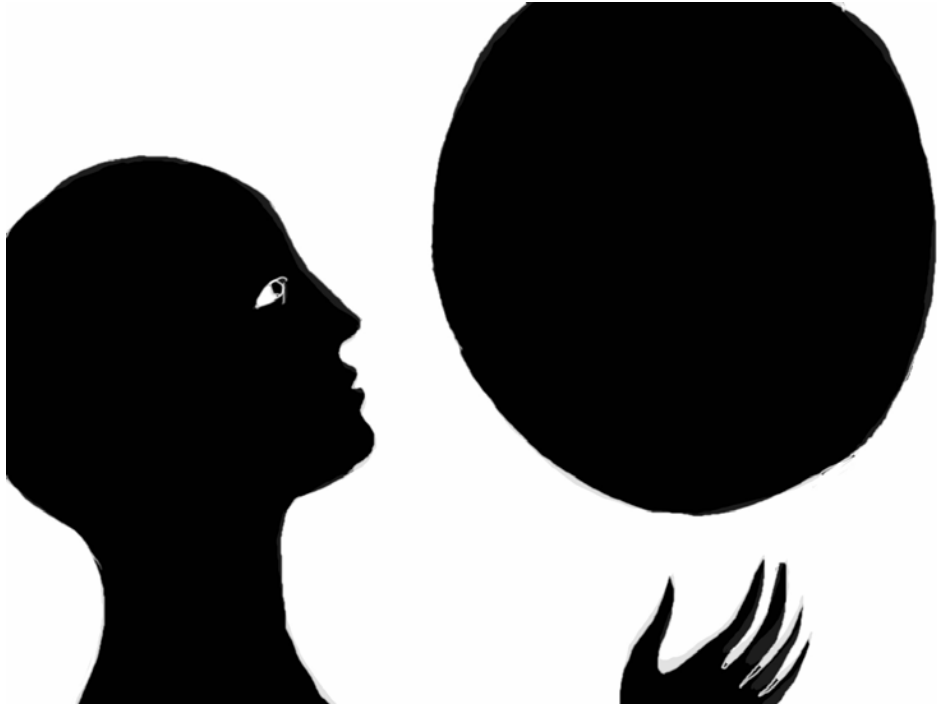


Director's Statement

I began filming *Black Holes | The Edge of All We Know* in the spring of 2016, when five colleagues and I launched the Black Hole Initiative, an interdisciplinary center for the study of black holes. Unlike the many fascinating objects in the sky, black holes have come to be central not only to astronomy, but also to mathematics, physics, and philosophy—not to speak of the way they figure in science fiction, in the art world, and in everyday speech. Two of those co-founders (both key figures in the film) are Sheperd Doeleman, the first director of the Event Horizon Telescope (EHT), and Andy Strominger, a long-time collaborator with Stephen Hawking.

By April 2016, I had begun working as a physicist/philosopher with the EHT— Alongside the scientific work, during the following years, I filmed what became the first of the three strands of *Edge*: the EHT's struggle to make the first image of a black hole. The resulting image was released on 10 April 2019 and seen in the following forty-eight hours by several billion people: the most-viewed scientific image in history. Also from 2016-19, I filmed a parallel effort by Hawking and colleagues, as they undertook to make sense of the (theoretical) threat that black holes pose to the very idea of universal physical law. Finally, philosophers reflect on these most mysterious objects: Is knowledge of the interior of a black hole even to be counted as real?

Edge weaves these strands (observation, theory, and philosophy) together, all around the theme of what it is possible to know of these darkest, most elusive and mysterious edges of space and time. Visualizing these efforts was not only part of the science itself, but also a challenge for filmmaking; in addition to *verité*, I brought in a wide range of simulations, but also 2D black and white expressive animation, graphic novel sequences, and physical models. The goal of the film is not just to popularize already-achieved science results—it is to bring the audience into the all-too human conduct of science, the dynamics of collaboration, the challenges of observing and theorizing, the tantalizing clues to space and time that can be garnered in the making of science at the absolute forefront of what we can understand.



About the Director – Peter Galison



Peter Galison is a physicist/historian of science/filmmaker at Harvard University. In 1997, he was named a MacArthur Fellow; with his Event Horizon Telescope colleagues, Galison shared in the 2020 Breakthrough Prize in Fundamental Physics for the first image of a black hole. He is a co-founder of the Black Hole Initiative at Harvard, an interdisciplinary center for the study of these most extreme objects. His documentary film (with Pamela Hogan, 2000) probed the moral-political debates over the H-bomb: "Ultimate Weapon: The H-bomb Dilemma." He and Robb Moss co-directed "Secrecy" (2008), on national security secrecy, which premiered at Sundance. The two also co-directed "Containment" (2015), about the need to guard radioactive materials and warn the 10,000-year future. Galison partnered (as dramaturg) with South African artist William Kentridge on a multi-screen installation, "The Refusal of Time" (2012) and an associated chamber opera. He is also the author of several books, including "Image and Logic"; "Objectivity"; (with L. Daston), and "Einstein's Clocks, Poincaré's Maps."



About the Editor & Co-Producer



Chyld King is editor and co-producer of *Black Holes | The Edge of All We Know* and is based in Boston, MA. He previously edited and co-produced Robb Moss and Galison's films *Containment* (2015), and *Secrecy* (2008), which premiered at the Sundance Film Festival. Chyld has served as an advisor for the Sundance Documentary Edit Lab and has consulted on multiple documentary projects. In the 2000's, he worked for several years with filmmaker Errol Morris, and was one of the editors of Morris' Academy Award winning film *The Fog of War*. He has cut documentary projects for film and television, including episodes of *God in America* for PBS, American Experience's film *The Amish*, and other projects that have aired on networks such as PBS, IFC, and Bravo.

Credits:

Produced and Directed by
Peter Galison

Edited and Co-Produced by
Chyld King

In Association with Sandbox Films

Executive Producers
Greg Boustead
Jessica Harrop

Associate Producer
Nicole Terrien

Music by
Zoë Keating

Cinematography
Stephen McCarthy
Allie Humenuk
Tim Cragg

Featuring
Shep Doeleman
Andy Strominger
Malcolm Perry
Sasha Haco
Stephen Hawking