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Dr. Sheperd S. Doeleman
Director
Event Horizon Telescope Collaboration

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. He 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.

As one of the founding members of the BHI, Doeleman leads a team studying supermassive black holes with sufficient resolution to directly observe the event horizon itself. Using Very Long Baseline Interferometry (VLBI) methods, the EHT telescope networks observe astronomical radio sources at 1.3 millimeter (mm) wavelengths. These sources include the supermassive black holes at the centers of our own Milky Way, called Sagittarius A* (SgrA*), as well as in Messier 87 (M87), the supergiant elliptical galaxy in the constellation Virgo.

Doeleman is a Guggenheim Fellow (2012) and was the recipient of the DAAD German Academic Exchange grant for research at the Max Planck Institute für Radioastronomie. He serves as a peer reviewer for the *Astrophysical Journal*, *Science*, and *Nature*, among others. Doeleman leads and co-leads research programs supported by grants from the National Science Foundation, the National Radio Astronomy Observatory (NRAO) ALMA-NA Development Fund, the Smithsonian Astrophysical Observatory, the MIT International Science & Technology Initiatives (MISTI), the Gordon and Betty Moore Foundation, and the John Templeton Foundation. He has taught at MIT and mentors students and post-doctoral fellows at MIT and Harvard.

Doeleman received his B.A. from Reed College in 1986, and left soon after for a year in Antarctica where he conducted multiple space-science experiments at McMurdo Station on the Ross Ice Shelf. With an appreciation for the challenges and rewards of instrumental work in difficult circumstances, he returned to complete a Ph.D. in astrophysics at MIT. After visiting to work at the Max Planck Institute as a recipient of the DAAD, he came back to MIT in 1995 for a postdoctoral fellowship, eventually serving as assistant director of the MIT Haystack Observatory.

Doeleman's interests focus on problems in astrophysics that require ultra-high resolving power—the ability to observe fine details of cosmic objects. His research employs the technique of Very Long Baseline Interferometry (VLBI), in which widely separated radio dishes are combined to form an Earth-sized virtual telescope. He has used this technique to study the atmospheres of dying stars, as well as stars that are just being born. His group at MIT pioneered development of instrumentation that enables VLBI to achieve the greatest resolving power possible from the surface of the Earth. He carried out the first global experiments using these new systems that successfully measured the size of the supermassive black hole at the center of the Milky Way Galaxy and in the galaxy M87. He now directs the international Event Horizon Telescope project, which recently succeeded in making the first image of a black hole. This project addresses several fundamental questions about the Universe: Do event horizons exist? Does Einstein's theory of gravity hold near a black hole? How do black holes affect the evolution of galaxies?