

University of Oxford



The 19th Hintze Lecture

Professor Heino Falcke

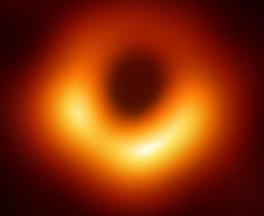
Radboud University, Nijmegen

The First Image of a Black Hole

Thursday 14th November 2019 at 17:30
(to be seated by 17:20)

Martin Wood Lecture Theatre
Clarendon Laboratory,
Parks Road, Oxford

Followed by a reception in
the foyer of the Martin Wood
Lecture Theatre



Abstract: One of the most bizarre, but perhaps also most fundamental predictions of Einstein's theory of general relativity are black holes. They are extreme concentrations of matter with a gravitational attraction so strong, that not even light can escape. The inside of black holes is shielded from observations by an event horizon, a virtual one-way membrane through which matter, light and information can enter but never leave. This loss of information, however, contradicts some basic tenets of quantum physics. Does such an event horizon really exist? What are its effects on the ambient light and surrounding matter? How does a black hole really look? Can one see it? Indeed, recently we have made the first image of a black hole and detected its dark shadow in the radio galaxy M87 with the global Event Horizon Telescope experiment. Detailed supercomputer simulations faithfully reproduce these observations. Simulations and observations together provide strong support for the notion that we are literally looking into the abyss of the event horizon of a supermassive black hole. The talk will review the latest results of the Event Horizon Telescope, its scientific implications and future expansions of the array.

Heino Falcke is professor of radio astronomy at the Radboud University in Nijmegen, the Netherlands. He is chair of the science council of the Event Horizon Telescope, member of the royal Netherlands academy for arts and science, knight in the order of the Dutch lion, and recipient of the Spinoza prize, the highest science award of the Netherlands.