

## AGPhil 5: Black Holes II

Time: Tuesday 16:15–18:15

Location: AGPhil-H14

**Invited Talk** AGPhil 5.1 Tue 16:15 AGPhil-H14  
**Portrait of a Black Hole: Objectivity and the Imaging of M87\* by the Event Horizon Telescope** — ●PETER GALISON — Black Hole Initiative, Harvard University, Cambridge, Mass. United States

In thousands of atlases depicting the working objects of scientific inquiry—from skeletons, clouds, and plants, to crystals, elementary particles, and stars, physicians and scientists across many domains worked out what counted as scientific objectivity. This long-term history, with its various takes on what a reliable image should be, converged in the yearslong struggle of the Event Horizon Telescope (EHT) to produce a picture of a black hole robust enough to make public. As a member of the imaging group, I was part of this effort—offering an occasion for the direct interaction of philosophy and physics as we in the collaboration thought through the different forms of images in consideration: ideal images, mechanically objective images, and expert judgment images. On April 10, 2019, the team released the first image of a black hole, an image viewed within a very few days by more than a billion people. This is a talk about how the EHT team of some 200 scientists came to assess as objective the glowing, crescent-like ring around the supermassive black hole M87\*.

**Invited Talk** AGPhil 5.2 Tue 17:00 AGPhil-H14  
**When is a black hole spacetime “as large as it can be”?** — ●JULIUSZ DOBOSZEWSKI — University of Bonn (Lichtenberg Group for History and Philosophy of Physics) — Black Hole Initiative, Harvard

University

Multiple conditions have been proposed in the literature aiming at capturing the idea that a general relativistic spacetime is “as large as it can be”. I will consider some of them in the context of particular black hole spacetimes, including standard solutions, regular black holes, and fully evaporating black holes. The emerging landscape is not just subtle but also surprising. Interesting connections arise between these issues and certain versions of the cosmic censorship conjecture. Philosophical consequences involve a notion of a time machine and impact the viability of metaphysical principles such as the principle of sufficient reason.

AGPhil 5.3 Tue 17:45 AGPhil-H14  
**A Role for the ‘Fauxrizon’ in the Semiclassical Limit of a Fuzzball** — ●MIKE D. SCHNEIDER — University of Illinois at Chicago, Chicago IL, USA

Recent remarks by Huggett and Matsubara (“Lost Horizon? - Modeling Black Holes in String Theory”, 2021) indicate that a ‘fauxrizon’ (portmanteau of ‘faux horizon’), such as is relevant to understanding astrophysical black holes according to the fuzzball proposal within string theory (and perhaps in firewall proposals, more generally), might ultimately solve the familiar black hole evaporation paradox. I clarify, with general upshots for quantum gravity research, some of what this suggestion would amount to: namely, identification of intertheoretic constraints on global spacetime structure in semiclassical models of fuzzballs.