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Bio

BIO

I am a research scientist, astronomer and astrophysicist in the Kavli Institute for Particle Astrophysics and Cosmology at Stanford University. My research focuses on how material spiralling into a supermassive black hole in the centre of a galaxy is able to release huge amounts of energy, powering some of the brightest objects we see in the Universe.

My research bridges the divide between observational and theoretical studies of black holes, using state of the art space telescopes, developing novel data analysis techniques and designing computer simulations of how light travels around black holes. I am using the X-rays that are emitted and measurements of how they reflect off of the material in its final moments before it falls in to create a 3D map of the extreme environment just outside the event horizon. I am interested in what happens to material and light just before it is lost into the black hole, how the corona that produces the radiation we see is powered, and how black holes are able to launch jets at almost the speed of light.

I am passionate about teaching and communicating science to the general public. I regularly give public lectures to a wide variety of audiences and am the founder and host of the Discover Our Universe public lecture series from Stanford's Kavli Institute of Particle Astrophysics and Cosmology. I have made a number of appearances on TV and radio, and am actively involved in a number of initiatives to involve the public in astronomy and physics.