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国台学术报告 NAOC COLLOQUIUM

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Time: Wednesday 2:30 PM, July 10th Location: A601, NAOC

First Direct Image of a Black Hole

Dr. Paul Ho

East Asian Observatory



Paul was born in Hong Kong, and immigrated to the United States at the age of 11. He received his training at MIT, obtaining both his S.B. (1972) and Ph.D. (1977) degrees in physics. He served as postdoctoral fellow at the Five College Radio Astronomy Observatory, and at the Radio Astronomy Laboratory at UC Berkeley. He was then faculty member at Harvard University before becoming SMA Project Scientist and Senior Astrophysicist at the Smithsonian Astrophysical Observatory. He has served as ASIAA Director during 10 of the last 17 years in Taiwan. He is currently the Director General of the East Asian Observatory, a newly established joint observatory among regional institutes: NAOC, NAOJ, KASI, and ASIAA. His scientific interests include molecular spectroscopy for resolving 3D dynamics, molecular outflows as the core process in star and planet formation, magnetic field via dust polarization morphology as the principal process in cloud collapse, supermassive black hole as the

definitive probe of high gravitational fields, large surveys of galaxies as a window on early cosmological structures. In his efforts to drive the growth of astronomy in Taiwan, Paul focuses on the development of instrumentation for forefront fields in astronomy. These include the SMA, AMiBA, ALMA, GLT, TAOS, WIRCam, HSC, PFS, ERG, and SPICA. Participation in these projects gained access for Taiwan to frontier research in astronomy, while building the infrastructures in Taiwan in terms of manpower, technology, and industrial partnership. Paul has promoted the participation of Taiwan in the EACOA, which unites the East Asian Observatories to work on regional collaboration and development, in order to make Asia competitive with the western countries. Paul has an H-index of 73. His most cited papers are on interstellar ammonia, the construction of the SMA, and the interacting M81 galaxy group as seen in HI. Paul is an academican of the Academia Sinica, and a Fellow of The World Academy of Sciences.

Abstract

The Event Horizon Telescope, a network of 8 radio telescopes, operating at millimeter-wavelengths, and spanning the surface of the earth, has successfully produced the first picture of a black hole. We achieved the highest angular resolution in astronomy by using the Very Long Baseline Interferometry. This Supermassive Black Hole, in the nucleus of the M87 galaxy, is the first case where we can resolve the event horizon, where even light itself cannot escape from the gravity of the black hole. This first picture also demonstrates directly Einstein's General Relativity on the distortion of space in the presence of strong gravity. In addition, we detect the glow of material swirling around the black hole in the form of an accretion disk, where material gather before falling inside the black hole. Asia has played a major role in this experiment. More improvements are coming.

All are welcome ! Tea and coffee will be served at 2:15 PM.