



University of Crete
Department of Physics

Physics Colloquium

Thursday, 23 February 2023 | 17:00 – 18:00, Seminar Room 3rd Floor

Black holes and conformal symmetry in the sky

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ABSTRACT

Gravitational wave observatories such as LIGO/Virgo, the Event Horizon Telescope, and other proposed experiments, are raising our knowledge of the astrophysics of black holes to a qualitatively new level of precision. On the fundamental theory side, in recent years we have witnessed the buildup of a remarkable new set of tools and techniques associated with conformal symmetry and its implications for the dynamics of quantum field theories and for the workings of holographic dualities such as the celebrated AdS/CFT correspondence. In this talk, I will discuss the long narrow threads that connect recent advances in fundamental theory to the observational frontier in astronomy. I will explain how conformal symmetry arises in the near-horizon region of rapidly spinning astrophysical black holes that possess an AdS-like throat geometry and discuss implications for gravitational wave observations and black hole images.