Saas-Fee Advanced Course 48

Tiziana Di Matteo · Andrew King · Neil Cornish

Black Hole Formation and Growth

The ultimate proofs that black holes exist have been obtained very recently thanks to the detection of gravitational waves from their coalescence and due to material orbiting at a distance of some gravitational radii imaged by optical interferometry or X-ray reverberation mapping. This book provides three comprehensive and up-to-date reviews covering the gravitational wave breakthrough, our understanding of accretion and feedback in supermassive black holes and the relevance of black holes for the Universe since the Big Bang.

Neil Cornish presents gravitational wave emission from black hole mergers and the physics of detection. *Andrew King* reviews the physics of accretion on to supermassive black holes and their feedback on host galaxies. *Tiziana Di Matteo* addresses our understanding of black hole formation at cosmic dawn, the emergence of the first quasars, black hole merging and structure formation. The topics covered by the 48th Saas-Fee Course provide a broad overview of the importance of black holes in modern astrophysics.

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