

ICTS PUBLIC LECTURE

BIG BANG, BLACK HOLES AND GRAVITATIONAL WAVES

Illustrations of Paradigm Shifts in Fundamental Science

Big Bang, Black Holes and Gravitational Waves now appear as compelling – even obvious – consequences of general relativity. Therefore, it may seem surprising that none of these ideas were readily accepted. Not only was there considerable debate, but in fact leading figures were often arguing on what turned out to be the “wrong side” of history. These developments provide excellent lessons for younger researchers on how science un-folds. Paradigm shifts in science occur when younger researchers have the *courage* not to accept ideas merely because they are mainstream; *patience* to systematically develop novel avenues they deeply believe in; and *maturity* to accept that a variety of factors – not all logical or even science related – can drive or slow down scientific progress.



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Abhay Ashtekar is the Eberly Professor of Physics and the Director of the Institute for Gravitational Physics and Geometry at Pennsylvania State University. His research interests span different aspects of General Relativity, Quantum Gravity and Black Holes. The recipient of the Einstein Prize and the Senior Research Prize of the Humboldt Foundation, his work is widely recognized. He is an elected member of the US National Academy of Sciences, Elected Fellow of the American Association for Advancement of Science, American Physical Society and Honorary Fellow of the Indian Academy of Sciences, and has served as the president of International Society for General Relativity and Gravitation.

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Register online

<https://bit.ly/AbhayAshtekar>

BG Image – Frame from a simulation of the merger of two black holes and the resulting emission of gravitational radiation (colored fields). The outer red sheets correspond directly to the outgoing gravitational radiation that one day may be detected by gravitational-wave observatories.
Credit: NASA/C. Henze



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