

Searching for the Biggest Bangs since the Big Bang

Professor John Ellis (CERN & KCL)



Abstract

Gravitational waves (GWs) from mergers of stellar mass black holes and neutron stars have been observed by the LIGO, Virgo and KAGRA collaborations, and supermassive black holes (SMBHs) are known to populate the cores of galaxies. Pulsar timing arrays (PTAs) have reported evidence for low-frequency GWs that may have been emitted by SMBH binary systems, or perhaps by physics beyond the Standard Model in the early Universe. In this talk I will relate the PTA data to observations of high-redshift SMBHs using the JWST and other telescopes, discuss scenarios for the assembly of SMBHs, and how they may be probed using intermediate-frequency GW detectors such as LISA and atom interferometers.

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Biography

Professor John Ellis earned his Ph.D. in theoretical particle physics in 1971 at Cambridge University. His pioneering work led to the discovery of the gluon, and he was one of the first to show how the Higgs boson could be produced and discovered. A world-renowned particle physicist, he was awarded the Maxwell Medal and Prize (1982) and the Paul Dirac Medal and Prize (2005) by the Institute of Physics. He was Elected Fellow of the Royal Society of London in 1985 and of the Institute of Physics since 1991. He won the First Award in the Gravity Research Foundation essay competitions in 1999 and 2005. Professor Ellis is currently the Clerk Maxwell Professor of Theoretical Physics at King's College London. He was appointed Commander of the British Empire (CBE) in 2012. He was twice the Deputy Division Leader for the Theory Division of CERN, and served as Division Leader for 1988–1994. He was a founding member of the committees selecting experiments at the LEP and LHC accelerators at CERN.

Time: 14:00, July 26 (Friday), 2024

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