

LNGS SEMINAR SERIES

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Have primordial gravitational waves been detected?

On March 17th, 2014 the collaboration BICEP 2, formed by a team of American astronomers, announced a major discovery: a specific polarization pattern in the Cosmic Microwave Background radiation, which is expected to arise from a gravitational-wave background originated by quantum effects during inflation, an epoch of accelerated expansion in the very early universe. The discovery, if confirmed, provides the "smoking gun" proof of inflation, opens up a new window on the physics of the very early universe (intriguingly, at the GUT energy scale) and a new era for gravitational-wave based cosmology. The scientific background of this discovery, its consequences for the physics of the early Universe and for the inflationary models, as well as the prospects for confirming (or disproving) it via the forthcoming analysis of Planck polarization data will be presented.

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