Seeking the New World of Spin Zero - Fundamental mysteries of nature and cosmic microwave background (CMB) polarization

Specific Seminar – Curriculum 1

June 6, 2025, 11.00 a.m.

Speaker:

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Abstract:

Particle cosmology is a discipline seeking a fundamental understanding of the Universe based on particle physics. Five mysteries drive our research today: cosmic inflation, baryon asymmetry, neutrino properties, dark matter, and dark energy. Resolving any of the five mysteries will revolutionize our picture of the Universe. Numerous interesting theoretical hypotheses have been proposed to this end. Many require new scalar particles, such as inflatons, axions, supersymmetric particles, etc. They are essentially an attempt to expand the role of the vacuum. Since we have not yet found such spin-zero particles, we shall invent new eyes to make an experimental or observational breakthrough. To this end, the observation of CMB polarization is one of the keys today. In this seminar, I focus on research topics to which I have contributed, including observations of CMB polarization for studying inflatons and searches for light axion-like particles.

Online attendance:

Remote Link: https://sissa-it.zoom.us/j/86958520605?pwd=WOBEu6Ol56wlBHdCfqPb69FTHstrba.1

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