

Primordial Graviton Production and Detection Prospects in the Pre-Big Bang Scenario

Tuesday, 17 December 2024 14:40 (20 minutes)

I will discuss the interpretation of the NANOGrav signal as a relic stochastic background of primordial gravitons, potentially produced within the framework of string cosmology's pre-big bang scenario. We demonstrate that this interpretation encounters limitations within a minimal version of the scenario; however, it becomes feasible when considering generalized, non-minimal extensions, even while preserving the S-duality symmetry intrinsic to string theory. In both scenarios, a significant gravitational wave signal could be produced, with the potential to be detected across multiple frequency ranges by upcoming interferometers, including Advanced LIGO, ET, LISA, and DECIGO.

This presentation will be based on:

1. I. Ben-Dayan, G. Calcagni, M. Gasperini, A. Mazumdar, E. Pavone, U. Thattarampilly and A. Verma, *Gravitational-wave background in bouncing models from semi-classical, quantum and string gravity*, JCAP **09**, 026 (2024).
2. P. Conzino, G. Fanizza, M. Gasperini, E. Pavone, L. Tedesco, and G. Veneziano, *Constraints on the parameters of the Pre-Big Bang scenario from NANOGrav data* (in preparation).

Primary authors: PAVONE, Eliseo (Istituto Nazionale di Fisica Nucleare); VENEZIANO, Gabriele (Collège de France and CERN); FANIZZA, Giuseppe (BA); TEDESCO, Luigi (BA); GASPERINI, Maurizio (B); CONZINU, Pietro (Istituto Nazionale di Fisica Nucleare & Università di Pisa)

Presenter: PAVONE, Eliseo (Istituto Nazionale di Fisica Nucleare)

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