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Constraints on cosmic strings using data from the first Advanced LIGO observing run

Abstract

Nambu-Goto cosmic strings are topological defects predicted to form at the earliest moments of the universe in the context of both Grand Unified Theories. They can also be predicted in the context of string theory. The network of these strings is supposed to lose energy through the production of loops and subsequent emission of gravitational waves. Therefore the recent detection of gravitational waves made by LIGO opened the exciting possibility of probing the existence of these objects. In this Journal Club we shall summarize and encourage the discussion of the results from Abbott et al. (2018), concerning the search for gravitational-wave bursts from cosmic strings using the Advanced LIGO 2015-2016 observing run (O1). Also, we shall explain how these results constrain the string parameters, using different loop distribution models.

Reference:

Abbott et al. (2018), Constraints on cosmic strings using data from the first Advanced LIGO observing run, doi = [10.1103/PhysRevD.97.102002](https://doi.org/10.1103/PhysRevD.97.102002)