

JOINT TUFTS/MIT COSMOLOGY SEMINAR

Scaling Density of Axion Strings

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In the QCD axion dark matter scenario with post-inflationary Peccei-Quinn symmetry breaking, the number density of axions, and hence the dark matter density, depends on the length of string per unit volume at cosmic time. The expectation has been that the string density tends to a constant, a feature of a string network known as scaling. It has recently been claimed that in larger numerical simulations the density of strings shows a logarithmic increase with time. This case would result in a large enhancement of the string density at the QCD transition, and a substantial revision to the axion mass required for the axion to constitute all of the dark matter. With a set of new simulations of global strings we compare the standard scaling (constant density) model to the logarithmic growth. We conclude that the apparent corrections to the density are artefacts of the initial conditions, rather than a property of the scaling network.

Tuesday, March 9, 2021, 2:30 pm

Zoom link will be distributed to joint cosmology seminar mailing list. If not
subscribed see <https://cosmos.phy.tufts.edu/mailman/listinfo/cosmology-seminar>

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