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An Effective Approach for Axion Wormholes

Wednesday 27 September 2023 16:00 (22 minutes)

Euclidean wormholes that arise in axion theories imply important phenomenological consequences in the context of the axion quality problem. In this work, we present an effective approach providing an analytic solution describing the structure of these axion wormholes. We identify the energy scales associated inside and outside the wormhole as the UV and IR regime of the wormhole respectively, which allows us to obtain the analytic structure for both the field-dependent wormhole action and its corresponding Peccei-Quinn violating operators applicable to a wide class of axion theories. We also give explicit examples that implement this approach, with some further implications and prospects.

Summary

Primary author: CHEONG, Dhong Yeon (Yonsei University & CERN)

Presenter: CHEONG, Dhong Yeon (Yonsei University & CERN)

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