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STRING MEMORY EFFECT

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Abstract

In systems with local gauge symmetries, the memory effect corresponds to traces inscribed on a suitable probe when a pure gauge configuration at infinite past dynamically evolves to another pure gauge configuration at infinite future. In this work, we study the memory effect of 2-form gauge fields which is probed by strings. We discuss the "string memory effect" for closed and open strings at classical and quantum levels. The closed string memory is encoded in the internal excited modes of the string, and in the open string case, it is encoded in the relative position of the two endpoints and the noncommutativity parameter associated with the D-brane where the open string endpoints are attached. We also discuss 2-form memory with D-brane probes using boundary state formulation and, the relation between string memory and 2-form soft charges.

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