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String Theory in Greater Paris

Rencontres Théoriciennes

"Supergravité, théorie des cordes et théorie M"

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Towards a theory of confining strings

We put forward the Axionic String Ansatz (ASA), which provides a unified description for the worldsheet dynamics of confining strings in pure Yang–Mills theory both in $D = 3$ and $D = 4$ space-time dimensions. The ASA is motivated by the excitation spectrum of long confining strings, as measured on a lattice, and by recently constructed integrable axionic non-critical string models. According to the ASA, pure gluodynamics in 3D is described by a non-critical bosonic string theory without any extra local worldsheet degrees of freedom. We argue that this assumption fixes the set of quantum numbers (spins, P- and C-parities) of almost all glueball states. We confront the resulting predictions with the properties of approximately $1^2 + 2^2 + 3^2 + 5^2 = 39$ lightest glueball states measured on a lattice and find a good agreement.

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