

**Institut Henri Poincaré**  
11 rue Pierre et Marie Curie, 75231 Paris cedex 05  
**String Theory in Greater Paris**

**Rencontres Théoriciennes**  
**“Supergravité, théorie des cordes et théorie M”**

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**Sergei Dubovsky**

*New York University*

**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.*

**Institut Henri Poincaré, salle 314, 3<sup>ème</sup> étage**

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