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Intrinsic width of the flux tube in 2+1 dimensional Yang-Mills theories

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In this talk we present a study of the flux tube in Yang-Mills theories with a particular focus on its intrinsic width.
In the Effective String Theory description of flux tubes, this quantity is typically neglected, since it has no measurable effects on the inter-quark static potential. However, it can be directly observed in the profile of the flux tube as a deviation from the expected gaussian shape.
In the recent past numerical lattice results on these deviations have been interpreted in terms of a dual superconductor model. We discuss the pros and cons of this proposal and compare it with the results of an effective description of the flux tube based on the Svetitsky-Yaffe mapping of Yang-Mills theories into spin models in the vicinity of the deconfinement transition.
We study in particular the $\mathrm{SU}(2)$ and $\mathrm{SU}(3)$ models in 2+1 dimensions, which are mapped into the Ising and Z_3 spin models in two dimensions respectively. The main feature of this description is that the intrinsic width is not a new independent quantity but can be related to the same physical scale appearing in the confining inter-quark static potential.
We test this prediction with precise numerical simulations of the $\mathrm{SU}(2)$ and $\mathrm{SU}(3)$ models, finding a good agreement with the numerical results.

Primary authors: NADA, Alessandro (Università di Torino); PANFALONE, Dario (Univesita' di Torino); CELLINI, Elia (University of Turin / INFN Turin); VERZICHELLI, Lorenzo (Università di Torino, INFN sezione di Torino); CASELLE, Michele (Università di Torino)

Presenter: VERZICHELLI, Lorenzo (Università di Torino, INFN sezione di Torino)

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