

Confinement Slingshot and Gravitational Waves

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In this talk, I will describe a quantum field theoretic phenomenon called the gauge “slingshot” effect. The effect occurs when a source, such as a magnetic monopole or a quark, crosses the boundary between the Coulomb and confining phases. The corresponding gauge field of the source, either electric or magnetic, gets confined into a flux tube stretching in the form of a string (cosmic or a QCD type) that attaches the source to the domain wall separating the two phases. The string tension accelerates the source towards the wall as sort of a slingshot. The slingshot phenomenon is also exhibited by various sources of other co-dimensionality, such as cosmic strings confined by domain walls or vortices confined by Z_2 strings. Apart from the field-theoretic value, the slingshot effect has important cosmological implications, as it provides a distinct source for gravitational waves. The effect is expected to be generic in various extensions of the standard model such as grand unification.

Presenter: ZANTEDESCHI, Michael (Tsung-Dao Lee Institute)

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