# Article information:

(PDF) Tachyonic AdS/QCD, Determining the Strong Running Coupling and β-function in both UV and IR Regions of AdS Space
<https://www.researchgate.net/publication/367243911_Tachyonic_AdSQCD_Determining_the_Strong_Running_Coupling_and_b-function_in_both_UV_and_IR_Regions_of_AdS_Space>

# Article summary:

1. The paper investigates the QCD-like running coupling αsAdS(Q2) and its associated β-function β(Q2) in the spirit of tachyonic AdS/QCD.

2. The function G(φ(z)) associated with tachyons distorts the AdS space, giving αsAdS(Q2) and its β-function β(Q2) at any Q2 scale, with Q2 the space-like momentum.

3. This provides a unified background for determining αsAdS(Q2) and its β(Q2) in both the ultraviolet (UV) and infrared (IR) regions using a single function in the framework of tachyonic AdS/QCD.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article titled "Tachyonic AdS/QCD, Determining the Strong Running Coupling and β-function in both UV and IR Regions of AdS Space" explores the QCD-like running coupling αsAdS(Q2) and its associated β-function β(Q2) in the context of tachyonic AdS/QCD. The authors distort the bulk AdS5 space using a color dielectric function G(φ(z)) associated with tachyons, with φ(z) being the tachyon field. The function presents different properties of αsAdS(Q2) at small and large values of the fifth-dimensional holographic variable z.

The article provides a detailed explanation of how the function distorts the AdS space, giving αsAdS(Q2) and its β-function β(Q2) at any Q2 scale, with Q2 being the space-like momentum. The result obtained for a large value of z is expected to show characteristics similar to nonperturbative QCD, while that obtained for a small value of z is expected to show characteristics similar to perturbative QCQ. The presence of free tachyons leads to distortion of the AdS space at a small z; however, condensed tachyon states also lead to large z distortion.

Overall, the article appears well-researched and informative. However, it is important to note that there may be potential biases in this study. For example, there may be limitations in using tachyonic AdS/QCD as a framework for determining αsAdS(Q2) and its β(Q2). Additionally, there may be other factors that could affect these measurements that are not considered in this study.

Furthermore, some points may have been left unexplored or unsupported claims made without sufficient evidence. For instance, while it is mentioned that investigations by [10] suggest that considering compact boundary, AdS corresponds to the confinement phase while the black hole resulting from the AdS phase corresponds to the deconfinement phase; no further details are provided on this topic.

In conclusion, while this article provides valuable insights into determining αsAdS(Q2) and its β-function β(Q2), readers should approach it with caution and consider potential biases or limitations in using tachyonic AdS/QCD as a framework for these measurements.

# Topics for further research:

* Compact boundary AdS and confinement phase
* Black hole resulting from AdS phase and deconfinement phase
* Limitations of tachyonic AdS/QCD framework
* Other factors affecting αsAdS(Q2) and β(Q2) measurements
* Nonperturbative QCD characteristics at large z
* Perturbative QCD characteristics at small z

# Report location:

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