

Manifestation of conformal symmetry in the spectra of light flavor baryons

Thursday, 12 November 2009 19:00 (1:00)

Abstract content

Summary

It is shown that the nucleon and $\Delta(1232)$ resonances reported so far form parts of irreducible representations of the conformal group. This phenomenon finds its stringent explication within the context of AdS_5/CFT_4 correspondence. According to the latter, it is believed that each state of a CFT, such like (approximately) QCD , S^3 , of AdS_{4+1} can be related to a state in the supergravity approximation to string theory on $AdS_{4+1} \times S^3$ meaning that spectra in both theories should be same. This observation justifies modeling spectra on $R \times S^3$. We here represent our recently developed quark model on S^3 with the angular $\cot \chi$ potential that depends on the second polar angle χ . The potential is shown to contain a leading term of its Taylor series decomposition the Coulombic + linear potential which is one of the possible AdS/CFT Wilson loop potentials, on the one side, and which coincides with the Cornell χ expansions acquire meaning of non-perturbative corrections. We furthermore draw attention to the fact that the cotangent hyperboloid. Such a potential has been recently obtained for the case of open strings ending on branes in a space that can be viewed as a portion of a flat Minkowski space, expressed in coordinates adapted to an observer at constant acceleration (so called Rindler space). We employ the developed formalism in the design of a dressing function for the gluon propagator from Fourier transforming the potential under investigation and find it finite in the infrared while approaching zero in the ultraviolet.

Presenter(s) : Dr. KIRCHBACH, Mariana (Institute of Physics, Autonomous University of San Luis Potosi Mexico)

Session Classification : Non perturbative methods in FT II