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From 3d dualities to hadron physics

Thursday, 5 December 2019 15:00 (3 hours)

When one of the space-time dimension is compactified on the circle, the QCD exhibits the chiral phase transition at some critical radius. When we further turn on a background theta term which depends on the compactified coordinate, a topological ordered phase appears at low energy via the winding of the theta. We discuss what kind of theories can describe the physics near the critical point by requiring the matching of topological field theories in the infrared. As one of the possibilities, we propose a scenario where the rho and omega mesons form a U(Nf) gauge theory near the critical point. In the phase where the chiral symmetry is restored, they become the dual gauge boson of the gluon related by the level-rank duality between the three dimensional gauge theories.

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