

茨城大学素粒子論研究室セミナー

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日時：2020/2/10 (月) 14:00-15:00

場所：E-301

Title : From 3d dualities to hadron physics

Abstract : When one of the space-time dimension is compactified on S^1 , the QCD exhibits the chiral phase transition at some critical radius. When we further turn on a background θ term which depends on the S^1 compactified coordinate, a topological ordered phase appears at low energy via the winding of θ . 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 ρ and ω mesons form a $U(N_f)$ 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, $SU(N)_{N_f}$ and $U(N_f)_{-N}$. This talk is based on [arXiv:1909.04082](https://arxiv.org/abs/1909.04082) [hep-th].