Contribution ID: **9** Type: **not specified**

Phase structure of linear quiver gauge theories from anomaly matching

Wednesday, 7 December 2022 15:20 (20 minutes)

We consider the phase structure of the linear quiver gauge theory, using the 't Hooft anomaly matching condition. This theory is characterized by the length K of the quiver diagram. When K is even, the symmetry and its anomaly are the same as those of massless QCD. Therefore, one can expect that the spontaneous symmetry breaking similar to the chiral symmetry breaking occurs. On the other hand, when K is odd, the anomaly matching condition is satisfied by the massless composite fermions. We also consider the thermal partition function under the twisted boundary conditions. When K is even, from the anomaly at finite temperature, we estimate the relation between the critical temperatures associated with the confinement/deconfinement and the breaking of the global symmetry. Finally we discuss the anomaly matching at finite temperature when K is odd.

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Session Classification: Parallel session B