Contribution ID: **80** Type: **Poster**

Thermal Properties of the Tetraquark X(3872) in Diquark-antidiquark Approach

Tuesday, 26 September 2017 20:45 (15 minutes)

During last decade properties of the tetraquark states, which may play an essential role in understanding of hadron dynamics, are among widely discussed problems in the literature. In this work we investigate the thermal features of the state X(3872) with the quantum numbers JPC = 1++. We consider it as a diquark-antidiquark bound state and use QCD sum rule method to explore the nature of this exotic resonance. By using a relevant interpolating current we calculate the two-point correlation function including contributions of nonperturbative condensates up to six dimensions. Equating the expression of the correlation function obtained using the operator product expansion and its hadronic representation, we derive thermal QCD sum rules for parameters of the X(3872) state. Our numerical calculations demonstrate that in the low temperature region the mass and decay constant of X(3872) are insensitive to temperature, but they decrease significantly before the critical temperature. At the deconfinement temperature the decay constant and mass attain approximately to 32% and 74 % of their vacuum values, respectively. Our zero-temperature results are in good agreement with the experimental measurements and other theoretical works presented in the literature.

Primary authors: Prof. VELIEV, Elşen Veli (Kocaeli University); Ms GÜNAYDIN, Seher (Kocaeli University); Prof. SUNDU, Hayriye (Kocaeli University)

Presenter: Prof. VELIEV, Elşen Veli (Kocaeli University)

Session Classification: Poster session

Track Classification: Exotic states and candidates