

## Abstract

We consider a rotating quark-antiquark  $(q\bar{q})$  pair in  $\mathcal{N}=4$  thermal plasma. By using AdS/CFT correspondence, the properties of this system have been investigated. We study variation of rotating string radius at the boundary as a function of the tip of U-shape string and angular velocity of rotating meson. We also extend the results to the higher derivative corrections i.e.  $\mathcal{R}^2$  and  $\mathcal{R}^4$  which correspond to finite coupling corrections on the rotating quark-antiquark system in the hot plasma. In  $\mathcal{R}^4$  case and for fixed angular velocity as  $\lambda^{-1}$  decreases the string endpoints get more and more separated. To study  $\mathcal{R}^2$  corrections, rotating quark-antiquark system in Gauss-Bonnet background has been considered. We summarize the effects of these corrections in the conclusion section.