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# Thermodynamics of heavy quarkonium in the spinning black hole background

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Abstract:
In this study, we explore the thermodynamics of heavy quarkonium within the context of a spinning black hole background. Specifically, we analyze the impact of angular momentum on various thermodynamic properties of heavy quarkonium, including interquark distance, free energy, binding energy, entropy, entropic force, and internal energy, based on the thermodynamic relationships.
Our results demonstrate that angular momentum diminishes the maximum interquark distance,thereby facilitating quarkonium dissociation. Furthermore, we note that angular momentum suppresses free energy. The analysis of binding energy reveals that angular momentum enhances the dissociation of mesons into free quarks and antiquarks. Additionally, our findings indicate that angular momentum augments entropy and entropic force, thereby accelerating quarkonium dissociation. Angular momentum also increases internal energy at extended interquark distances.Lastly,we observe that the effects of angular momentum on quarkonium are more significant when the axis of the quark pair is perpendicular to the direction of angular momentum.

**Primary authors:** 王, 胜 (华中师范大学); 侯, 德富

**Co-authors:** 陈, 君霞; 朱, 州润; 陈, 勋

**Presenters:** 王, 胜 (华中师范大学); 侯, 德富

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