

## **Quantum information entropy of heavy mesons in the presence of a point-like defect**

### **Abstract**

Using Schrödinger's formalism, we investigate the quantum eigenstates of the heavy mesons trapped by a point-like defect and by Cornell's potential. One implements this defect to the model considering a spherical metric profile coupled to it. Furthermore, the Nikiforov–Uvarov method is applied to theory to study the quantum eigenstates of the heavy mesons. To calculate the quantum information entropy (QIE), one considers the wave functions that describe the charmonium and bottomonium states. To explore the QIE, we use the well-known Shannon's entropy formulated at the position and reciprocal space. The analysis of the QIE gives us relevant information about how the quantum information change with the variation of the point-like defect. Consequently, considering the Białynicki-Birula and Mycielski (BBM) relation, we show how this defect influences the quarkonium position and momentum uncertainty measures.

### **Keywords**

Cornell potential; Heavy mesons; Nikiforov–Uvarov method; Schrödinger equation