

The effects of minimal length on the Kerr metric and the Hawking temperature

We first resume the main properties of the pseudo-complex General Relativity (pcGR). Then the Hawking temperature is determined within pcGR for a black hole, with varying the intensity of the dark energy around the central mass. In particular we investigate the effects of a minimal length, which is a consequence of pcGR. Three cases are studied: i) The pc-Schwarzschild case with zero minimal length; ii) The pc-Kerr case with zero minimal length; and finally iii) the pc-Kerr-case with a minimal length. We show that Hawking radiation can also be emitted in a curved space (the gravitational Schwinger effect), not necessarily at the surface of a star. When an event horizon is present, the theory predicts the occurrence of negative temperature, which generate negative pressure, stabilizing the star in this manner. We also show that the effects of a minimal length are only noticeable for very small black hole masses, showing that their formation is inhibited.

Authors: Prof. MAGHLAOUI, L. (UNAM); Prof. O. HESS, Peter (UNAM)

Presenter: Prof. O. HESS, Peter (UNAM)