

Since a black hole does not radiate, our only source of information comes from its interaction with observable objects. Accretion disk models are the key to connect observations of accretion disks with the theory of black holes, motivating the search for improved models.

The space-time in the vicinity of the horizon in the presence of a static distribution of matter localized outside the black hole horizon in the form of accretion disks, remain vacuum; however, this presence of matter distorts the metric. This solution is called distorted black hole. In general, if the distribution of matter outside the black hole is axisymmetric, the metric of the distorted black hole allows a detailed description discussed by R. Geroch and J.B. Hartle in 1982.

In this work, we describe the construction of a thin accretion disk outside a distorted black hole horizon, when only low order multipoles are present. The physical characteristics of the resulting thin disk are discussed.