

Luminosity of accretion disks in compact objects with a quadrupole

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We consider the circular motion of test particles in the gravitational field of a static and axially symmetric compact object described by the q metric. To this end, we calculate orbital parameters of test particles on accretion disks such as angular velocity, total energy, angular momentum, and radius of the innermost stable circular orbit as functions of the mass and quadrupole parameters of the source. The radiative flux, differential and spectral luminosity of the accretion disk, which are quantities that can be experimentally measured, are then explored in detail. The obtained results are compared with the corresponding ones for the Schwarzschild and Kerr black holes in order to establish whether black holes may be distinguished from the q metric via observations of the accretion disk's spectrum

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