The optical appearance of spherical objects

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We discuss the importance of multi-ring images in the optical appearance of spherically symmetric compact objects, when illuminated by an optically and geometrically thin accretion disk. On the one hand, we shall consider some spherically symmetric black hole and wormhole geometries characterized by the presence of a second critical curve, via a uni-parametric family of extensions of the Schwarzschild metric. We will show the presence of additional light rings in the intermediate region between the two critical curves. On the other hand, a sub-case of an analytically tractable extension of the Kerr solution, with both a critical curve and an infinite potential barrier at the object's center for null geodesics. Our results point out to the existence of multi-ring images with a non-negligible luminosity in shadow observations.