
MAGIC

Science of the Cosmos

Contribution ID: 58

Type: **not specified**

Accurate analytical formulas for light propagation in general static spherically symmetric spacetimes

We extend the approximate analytical formulas developed in our previous work [1] for ray tracing in regions near compact objects. Our approach covers a broad range of spherically symmetric static spacetimes from a variety of gravitational theories. These analytical expressions allow efficient and accurate calculations of: black hole accretion disk imaging, polarized light analysis, and pulsar luminosity curves, among other astrophysical applications. In particular, we present isoradial curves for the Johannsen-Psaltis and Rezzolla-Zhidenko metric families, thin accretion disk imaging, and QU polarization diagrams for hotspots orbiting near the ISCO (innermost stable circular orbit) radius.

References:

[1] J. Claros and E. Gallo, Phys. Rev. D 109, 124055 (2024),
2403.18543.

Authors: Dr GALLO, Emanuel (IFEG-CONICET / FaMAF-UNC); Mr CLAROS, Jonathan (IFEG - CONICET, FaMAF - UNC)

Presenter: Mr CLAROS, Jonathan (IFEG - CONICET, FaMAF - UNC)