

Polarimetry imprints of hot spots orbiting boson stars

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We use the polarized ray-tracing software GYOTO 2.0 to simulate the orbits of isotropically emitting hot spots around solitonic boson star configurations with different compactities, and obtain the Stokes parameters describing the flux intensity and the Q-U parameters. Two observables can be built with these parameters, namely the Electric Vector Position Angle (EVPA) and the Q-U loops on the observer's screen. We produce these observables for every boson star configuration and compare them with their counterparts in the Schwarzschild spacetime. Our results indicate that these observables can be used to distinguish between a compact boson star and a black-hole, even in situations of extreme compactness for which the optical observables of black-holes are closely mimicked by the boson star.

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