

On the fate of the light ring instability

There is a scientific consensus about the reality of black holes (BHs) as key ingredients of the physical Universe. Yet, both the inability to observationally proof the “BH hypothesis” and its challenging and far-reaching theoretical consequences, demand a thorough scrutiny of its alternatives. In this spirit, a variety of horizonless exotic compact objects (ECOs) have been proposed: the “ECO hypothesis”. Any putative ECO model must overcome theoretical and observational tests to become a contender, either replacing or co-existing, with black holes.

In this talk I will address a key challenge for horizonless BH imitators, discussing how the very same property that seems to be required to make them effective BH foils - the existence of bound photon orbits, or light rings - can source their own demise.

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