

Photon region and shadow of a rotating 5D black string

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Plenty of efforts have been made to explore the black string and its instability, but the fate of the black strings with fewer extra dimensions is still inconclusive. Now starting from the 5D uniform black string, we show that the EHT observations of *M87* and *SgrA* can not only rule out the black string with an infinite extra dimension, but also constrain the length of a compact extra dimension, which is much smaller than the critical length given from the Gregory-Laflamme (GL) instability. Our findings support the hypothesis that the extra dimension is compact avoiding the GL instability.

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