

APR20-2020-020105

Abstract for an Invited Paper
for the APR20 Meeting of
the American Physical Society

Tests of General Relativity with Black Hole Shadows

DIMITRIOS PSALTIS, University of Arizona

The imaging of black-hole shadows with the Event Horizon Telescope has opened a new window into the strong-field spacetimes of these extreme astrophysical objects. For the Kerr spacetime, the shadow of a black hole is nearly circular with a size that depends almost entirely on its mass. I will describe how this property of Kerr shadows allows us to perform null-hypothesis tests of General Relativity, when the mass of the black hole is known a priori. I will discuss metrics that deviate from Kerr and their signatures related to the shapes and sizes of black-hole shadows. I will conclude with a prognosis on what ground-based observations of shadows can tell us about black-hole metrics and the underlying theory of gravity.