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## **Black hole shadow as a standard ruler in cosmology**

*Friday, 9 July 2021 09:10 (20 minutes)*

Advancements in the black hole shadow observations may allow us not only to investigate physics in the strong gravity regime, but also to use them in cosmological studies. We propose to use the shadow of super-massive black holes as a standard ruler for cosmological applications assuming the black hole mass can be determined independently. First, observations at low redshift distances can be used to constrain the Hubble constant independently.

Secondly, the angular size of shadows of high redshift black holes is increased due to cosmic expansion and may also be reachable with future observations.

Talk is mainly based on the paper:

O.Yu. Tsupko, Z. Fan and G.S. Bisnovatyi-Kogan, Black hole shadow as a standard ruler in cosmology, *Classical and Quantum Gravity* (2020)

see also:

G.S. Bisnovatyi-Kogan and O.Yu. Tsupko, Shadow of a black hole at cosmological distances, *Physical Review D* (2018);

V. Perlick, O.Yu. Tsupko and G.S. Bisnovatyi-Kogan, Black hole shadow in an expanding universe with a cosmological constant, *Physical Review D* (2018).

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