Contribution ID : **131** Type : **Oral talk**

Galactic center shadows: beyond the standard model

Wednesday, 23 October 2024 12:00 (30)

Zakharov et al. (2005a) predicted an opportunity to reconstruct a shadow in Sgr A* with ground based or space-ground interferometer acting in mm or sub-mm band (the Millimetron was mentioned for such needs). The prediction was realized in May 2022 since the Event Horizon Telescope (EHT) Collaboration presented results of a shadow reconstruction for our Galactic Center (earlier the shadow around the supermassive black hole in M87 was reconstructed in 2019). These reconstructions were based on EHT observations done in 2017. For Reissner–Nordström metric Zakharov et al. (2005b) derived analytical expressions for shadow size as a function of charge and later these results were generalized for a tidal charge case (Zakharov, 2014). We discuss opportunities to evaluate parameters of alternative theories of gravity with shadow size estimates done by the EHT Collaboration, in particular, a tidal charge could be estimated from these observations (Zakharov, 2022). We also discuss opportunities to use Millimetron facilities for shadow reconstructions in M87* and Sgr A*. In our recent studies (Zakharov, 2024) we discuss shadow formations for cases where naked singularities or wormholes substitute black holes in galactic centers.

References

Zakharov A. F., Nucita A. A., De Paolis F., Ingrosso G. (2005a) New Astron., 10, 479

Zakharov A. F., De Paolis F., Ingrosso G., Nucita A. A. (2005b) A & A 442, 795

Zakharov A. F. (2014) Phys. Rev. D 90, 062007

Zakharov A. F. (2022) Universe 8(3), 141

Zakharov A.F. (2024, in press)

Primary author(s) : Prof. ZAKHAROV, Alexander (BLTP JINR, Dubna)

Presenter(s) : Prof. ZAKHAROV, Alexander (BLTP JINR, Dubna)

Session Classification : Plenary

Track Classification : Gravitation and cosmology