



Contribution ID: 229

Type: **Invited talk in the parallel session**

GRAVITY: Optical/IR Interferometry and General Relativity in the Galactic Centre

Wednesday, 7 July 2021 10:10 (40 minutes)

The GRAVITY instrument at the Very Large Telescope (VLT) has transformed the Galactic centre into a laboratory to test the strong field regime of gravity theories. The supermassive black hole in the center of the Milky Way (Sgr A) is, at a distance of 8kpc, the closest of its kind and the largest in the sky. It is surrounded by a nuclear cluster of high velocity stars called S-stars, whose trajectories are governed by the gravitational field of the black hole. The GRAVITY instrument combines the light of four 8m telescopes in the K-band and is equipped with a separate fringe-tracking channel and an adaptive optics system. This allows long integration times on faint objects and enables a resolution of a few 10s of microarcseconds in the Galactic centre and thus a day-by-day monitoring of stellar orbits. Following the star S2/S-02, we have detected the combined gravitational redshift and transverse Doppler effect as well as the Schwarzschild precession of the orbit. GRAVITY is able to detect emission from the location of Sgr A at all times. During the high emission state, GRAVITY records the continuous changes in position and polarisation of flaring material near the innermost stable circular orbit. I will discuss how we obtained our recent results and put them in the context of gravity theories.

Primary author: STRAUB, Odele (Max Planck Institute for Extraterrestrial Physics)

Presenter: STRAUB, Odele (Max Planck Institute for Extraterrestrial Physics)

Session Classification: Theoretical and Observational Studies of Astrophysical Black Holes

Track Classification: Black Holes: Theory and Observations/Experiments: Theoretical and observational studies of astrophysical black holes