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The curious case of S62: The missing classical GR test in the Galactic Center

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The supermassive black hole at the centre of our galaxy, Sagittarius A*, is surrounded by a dense cluster of young massive stars. Amongst these stars, the precise stellar astrometry and spectroscopy of the star S2 have been used to observe the gravitational redshift signature and the prograde relativistic precession in its orbit predicted by General Relativity. Closer in, The star S62 has been approaching the central milliarcseconds of our galaxy over the last few years. Its known trajectory tells us that the star will have its closest approach to the Super Massive Black Hole in June 2025 at an angular separation of just one milliarcsecond. This is the smallest projected distance for all known stars, making S62 the most promising lensing candidate near a SMBH. In this talk, I will present the current observational data of S62, discuss the prospects of measuring its lensing in 2025 and present the current joint theoretical and observational efforts employed by the GRAVITY collaboration to perform the missing classical GR test in the Galactic Center.

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