

Modern Trends in Physics Research SEMINAR

Wednesday, January 27th, 2016 at 12.00,
room 16, Faculty of Physics, AMU

Dr Stefan Gillessen

Max-Planck-Institut für extraterrestrische Physik,
Garching, Germany

The Galactic Center: A unique astrophysical laboratory

Located at 8kpc only, the Galactic Center allows studying a galactic nucleus in unparalleled detail. With the advent of high-resolution, near-infrared instrumentation in the last decade it became possible to follow individual stellar orbits around the radio source Sgr A* with orbital periods as short as 12 years. The orbits provide compelling evidence for the massive black hole paradigm. The next generation near-infrared instrument GRAVITY aims at interferometrically combining the light of the four telescopes of ESO's VLT. The higher resolution will allow monitoring stellar orbits with orbital periods of 1 year only, and the relativistic prograde periastron precession gets accessible. The astrometric accuracy of GRAVITY is of order of the event horizon size of Sgr A*. This means that we might have access to measuring the spin of Sgr A*. In the past few years the small gas cloud G2 has been approaching Sgr A*. We were able to follow the tidal evolution of G2 for a decade, beautifully showing how the object got stretched ever more and how it passed the point of closest approach in 2014. The cloud is a unique probe of Sgr A*'s atmosphere, and we have observational hints that gas passing so close to Sgr A* experiences a drag force.



Recommended popular articles:

Gas cloud in the galactic centre
(<https://www.mpg.de/8777573/gas-cloud-galactic-centre>)

ERC Starting Grant for Stefan Gillessen
(http://www.mpe.mpg.de/980185/News_20121105)

Obiad czarnej dziury szybko się zbliżyć.
(<https://www.eso.org/public/poland/news/eso1151>)

A short tutorial on
"How to apply for ERC grants" will follow at 14:30

Details and the complete list of seminars: <http://zon8.physd.amu.edu.pl/~miran/seminars.html>