FIAS Colloquium

Thursday, August 7, 2014, 14:30
Physics Building, Max-von-Laue-Str. 1, 60438 Frankfurt am Main
Lecture Hall 2.116

Speaker: Prof. Dr. Heino Falcke, Radboud University, Nijmegen & ASTRON Dwingeloo

Title: Towards Imaging the Black Hole Event Horizon in the Galactic Center

More than 40 years ago the first quasars were discovered in the most distant parts of our universe, making them the most luminous objects we know. It was then a big mystery how a source of the size of the solar system could possibly produce as much light as one trillion stars. Very quickly supermassive black holes at the centers of galaxies became the main suspects for explaining these strange objects. Black holes are theoretical predictions of Einstein's General Theory of Relativity, where large amounts of matter are concentrated so much that even light cannot escape its gravitational attraction. Thus, black holes mark singularities in space and time, which are surrounded by an event horizon that allows matter and light to go inwards but never go out again. However, do these supermassive black holes and their event horizons really exist? The best place to look is in the center of our own Milky Way. Here a compact radio source with a mass of 4 million times the mass of the sun, seems to mark the central black hole of our Galaxy, providing by the far the best evidence for the existence of black holes in general. Radio observations are now probing the smallest scales of this object, eventually making it possible to even image the elusive event horizon of a black hole for the very first time.