

The forthcoming Radioastron Mission as a tool for GR tests in the strong gravitational field limit

A.F. Zakharov (1,2), F. DePaolis(3), A.A. Nucita (3), G. Ingrosso (3)

(1) Institute of Theoretical and Experimental Physics, Moscow, Russia, (2) Astro Space Centre of Lebedev Physics Institute of RAS, Moscow, Russia, (3) Lecce University, Italy

In 2007 the Radioastron satellite will be launched. As a result 10-meter radio telescope will be located at a high orbit around the Earth. Actually it will be a generalization of VLBI technique using space – ground base. The interferometer will have extraordinary angular resolution, namely at the shortest wavelengths angular resolution is about $10^{-5} - 10^{-6}$ *as*. These angular sizes are comparable with angular sizes of shadows (mirages) around nearest supermassive black holes. For example, the size of the shadow around the black hole in the Galactic Centre is about $50 \mu as$, it means that in principle such a tool like the Radioastron interferometer could resolve the shadow. Analyzing the shapes of shadows (mirages) one could evaluate parameters of a black hole such as spin a , inclination angle θ and a black hole charge (or magnetic monopole) and test GR in the strong gravitational field limit corresponding gravitational fields near black hole horizons.