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TIME: Monday, 11:00 AM, Nov. 25 2013 LOCATION: A601 NAOC

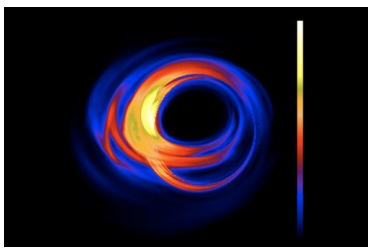
Prof. Maurizio Falanga (International Space Science Institute)

Professor Maurizio Falanga was born in Basel, Switzerland and graduated in Theoretical Physics at the University of Basel. He received his Ph.D. degree in Astrophysics at the University of Rome “La Sapienza”, Italy. After his Ph.D. he held various research fellowship positions in high-energy astrophysics departments in Paris, France. Falanga worked on accretion and emission physics in neutron stars, white dwarfs, and black holes for more than 15 years as a scientist and teacher. He published over 100 papers in his research fields, and has been invited to serve on a number of high-level international committees. During the last four years he has been involved in space science administration as the science programme manager at ISSI in Bern, Switzerland. Since September 2013, Prof. Maurizio Falanga has been appointed as the first Executive Director of ISSI-BJ and will share his time between Bern and Beijing. He will lead ISSI-BJ in its formation and in promoting space sciences research by worldwide collaborations using similar tools to those used by ISSI in Bern.

The International Space Science Institute in Beijing (ISSI-BJ) to facilitate international collaboration

Abstract (20 mins): I will introduce the International Space Science Institute in Beijing (ISSI-BJ) that has been recently jointly established by the National Space Science Center (NSSC) and the International Space Science Institute (ISSI) in Bern, Switzerland with the support of the Chinese Academy of Science (CAS). The main mission of ISSI-BJ is to contribute to the achievement of a deeper scientific and technological understanding of future space missions as well as of the scientific results from current and past missions through multidisciplinary research, possibly involving, ground based observations and laboratory experiments, using similar tools as ISSI, i.e. Forums, International Teams, Workshops, Working Groups or individual Visiting Scientists. The Program of ISSI-BJ covers a widespread spectrum of space science disciplines, including solar and space physics, planetary science, astrobiology, microwave gravity science and Earth observation from space. It offers a complement to the ISSI program with special emphasis on future scientific opportunities. I will also introduce how the Scientific communities can apply to ISSI-BJ with their own research projects.

General Relativistic Flux Modulations from Disk Instabilities in Sagittarius A*



Abstract (25 mins): The compact radio source Sgr A* at the center of our Galaxy provides the most compelling evidence for the existence of supermassive black holes. Both near-IR and X-ray flares have been detected from this object, sometimes modulated with a (quasi)-period of ~17-20 minutes, suggesting an emission region at ~3 RS, where RS is the Schwarzschild radius for an inferred mass of ~3.7 106 MSun. The X-ray flares are notable for its detailed lightcurve, which also reveals important structure reflecting the geometry of the emitting region. Simulations of Sgr A*'s disk have revealed the growth of a Rossby wave instability (particularly in its MHD form), that enhances the accretion rate for several hours, possibly accounting for the observed flares. In this seminar, I will present how I carry out state-of-the-art ray tracing calculations in a Schwarzschild metric to determine as accurately as possible the lightcurve produced by general relativistic light-bending, lensing effiect, doppler effect and travel time delay during such a disruption. The Rossby-wave induced spiral pattern in the disk is an excellent fit to the data, implying a disk inclination angle of ~77 °. Note, however, that if this association is correct, the observed period is not due to the underlying Keplerian motion but, rather, to the pattern speed. The favorable comparison between the observed and simulated lightcurves provides important additional evidence that the flares in Sgr A* are produced merely a handful of Schwarzschild radii above the event horizon.

All are welcome! Tea, coffee, biscuits will be served at 10:45 A.M.