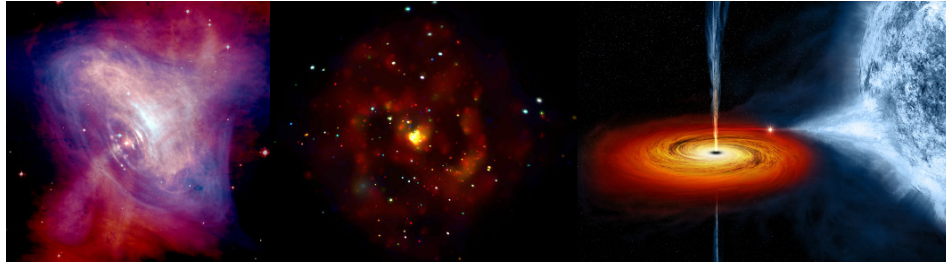


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X-ray reverberation in accreting Black Hole systems : NGC 4593

X-ray reverberation in accreting Black Hole
systems : NGC 4593

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Evidence like fast X-ray variability timescale, large rms fluctuations show that the light emitting source must reside closest to the black hole, however, its size, geometry and location are still elusive and usually associated with the base of the radio jet residing on the vertical spin axis of the black hole. Here we are working on NGC 4593 which is a type of Seyfert galaxy. It is a spiral galaxy with redshift $z=0.008$ and situated at distance 37.9 Mpc towards constellation Virgo. It has the apparent visual magnitude of 11.67. However, it has been realised that GR corrections are essential to consider when describing the radiation within few R_g radii of the black hole, e.g., Iron emission line at 6.4 keV are observed to have highly asymmetric profile due to the gravitational redshift. This kind of galaxy has strong Fe emission line activity, so that having the signature of strong gravity is of particular interest. Scope Among the observational evidence that embed the signature of strong gravity, X-ray reverberation is the most important where X-rays from the corona (emitting source) are reflected off the inner part of the accretion disc and provide a delayed, reprocessed emission. The key idea of GR-motivated X-ray reverberation is that the delay timescale between the direct coronal emission and the reprocessed disc emission can be significantly longer than expected due to the bending of photon trajectories in the presence of the black hole. Therefore, the effect of excess delay is expected to be seen if the disc-corona geometry is very compact.

An attempt to understand the geometry of the NGC 4593 using GR photon ray-tracing model with the enhanced throughput and spectral resolution of modern X-ray telescopes like CHANDRA, XMM-Newton may provide a great exposure to all this type of galaxies in X-ray astronomy world.

Presentation Type

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