

Abstract: The presence of X-ray radiation that comes from the innermost regions of Active Galactic Nuclei indicates a presence of a hot gas component located close to the central black hole. The exact location and geometry of this so called corona is not known and various configurations are being considered in the literature. One of the suggestions for the geometry is a rather compact region located on the symmetry axis of the black hole (lamp-post model). Another variant is a layer that surrounds the accretion disk on both sides (slab model). Other models consider anything in between also in combination with a truncated disk.

One of the key questions connected with the corona that is not often addressed is how is the corona energized, i.e. where does it take energy from. Assuming the disk is the only source of energy in an accreting system and that its internal energy is partly radiated and partly used to support magnetic fields, we evaluate geometrical constraints on the corona from the energy conservation condition. Lastly, we try to investigate the total emitted spectrum of a system consisting of a central black hole, a thin accretion disk and a slab corona.