

# X-RAY BACKGROUND AND COSMOLOGY

Andrzej Sołtan

The X-ray background (XRB) is generated mostly by Active Galactic Nuclei (AGN) and clusters of galaxies. A fraction of the soft XRB (below 1 keV) is emitted also by the diffuse gas known as Warm-Hot Intergalactic Medium (WHIM).

AGNs are inherently associated with the early stages of the galaxy formation. Apparently all galaxies are hosts to the supermassive black holes. Usually, a presence of the black hole in the central region of a galaxy can be confirmed by the X-ray emission.

Clusters of galaxies, constitute the largest gravitationally bound structures in the Universe. The X-ray emission by hot intracluster gas allows us to investigate in detail the mass distribution within a cluster, including dark matter.

Roughly half of the baryonic matter in the Universe remains undetected. It is distributed in the intergalactic space in structures dominated gravitationally by dark matter. In the areas surrounding galaxies, the temperature and density of baryons increase sufficiently to emit soft X-rays. This phase of the intergalactic matter, called WHIM, is responsible for small angular scale fluctuations of the soft XRB.