INTEGRAL Galactic Hard-X and soft Gamma ray background

Roman Krivonos*†[1]

[1]Space Research Institute of the Russian Academy of Sciences (IKI) – 117997, 84/32 Profsoyuznaya Str, Moscow, Russia

Abstract

The energy range above 20 keV and below a few MeV remains the most challenging observational window of the X-ray sky because of high particle-induced background and complexity of resolving point X-ray emitters and diffuse astrophysical background. The key properties of the hard X-ray and soft-gamma ray telescopes onboard the INTEGRAL observatory, namely the large field of views, ability to resolve flux from the point X-ray sources, and finally the long life span of the mission, allowed to conduct the most sensitive hard X-ray survey of the whole Galaxy and provide the key measurements of the Galactic hard X-ray and soft gamma-ray background. It has been proven that the Galactic Ridge X-ray Emission (GRXE) below 60 keV follows the NIR intensity of the Milky Way, which fully confirms its stellar origin. The spectrum of the GRXE reveals two distinct components with a minimum at about 80 keV. The low-energy component, associated with the GRXE, is consistent with accretion flow model of intermediate polars and yields an estimate of about 0.6-0.7 Msun for the average mass of white dwarfs in the Galaxy. The high-energy part of the spectrum, dominating above 60 keV, has been attributed to the gamma-ray background, detectable with IBIS telescope up to 200 keV. These results will undoubtedly serve as a foundation for future hard X-ray and soft gamma-ray missions.

*Speaker
†Corresponding author: