

Scattering indicatrix of unknown radiation by the nucleus of our galaxy

Vladimir Aksayskiy vladimir.aksayskiy@mail.ru

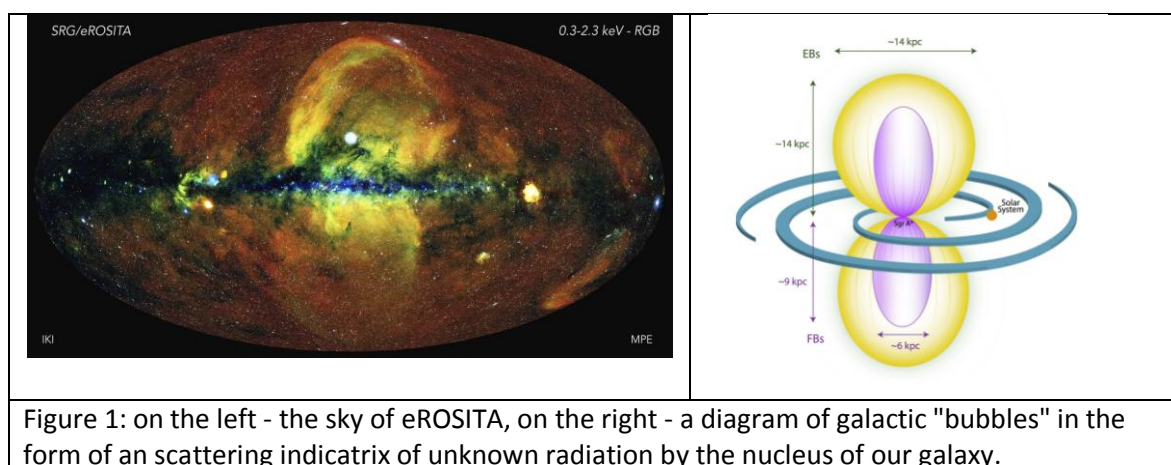
Abstract

The eROSITA X-ray telescope has seen a "figure eight" of two "bubbles" at the center of our galaxy. It is possible that this is the indicatrix of scattering by the galactic nucleus of unknown radiation with a wavelength of 20-100 pc.

Text

The Russian-German orbital observatory Spektr-RG discovered two huge bubbles of hot gas above and below the center of the Galaxy [1-2]. Their origin has not yet been clarified - there are only hypotheses. The discovery was made thanks to the eROSITA X-ray telescope, one of two instruments installed on board the Spektr-RG.

Figure 1 shows the sky map of the eROSITA telescope and a scheme of two galactic "bubbles" in the form of a "figure eight" with their sizes.



Curiously, if we consider a galaxy as a quasi-particle of a cloudy metagalaxy, then in the figure of two "bubbles" it is easy to see the light scattering indicatrix.

It can be seen from the shape of the indicatrix that the scattering is Rayleigh, - and if the scatterer is the nucleus of a galaxy with a size of $\sim 2 - 10$ pc, then the wavelength of the scattered radiation will be $\sim 20 - 100$ pc.

Thus, the X-ray glow of the "bubbles" makes the indicatrix of the unknown radiation visible to us.

Links

1. <https://www.nature.com/articles/s41586-020-2979-0>
2. <https://smotrim.ru/article/2496978>