

Gamma-ray emission at the base of the Fermi bubbles

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The Fermi bubbles (FBs) are two large lobes observed in gamma rays up to 55 degrees above and below the Galactic center. Although the FBs were discovered 8 years ago, their origin is still unknown. Even the process of production of the gamma rays: leptonic inverse Compton scattering or interactions of hadronic cosmic rays with gas, is not yet known. Answering the questions of the origin of the FBs and the nature of the gamma-ray emission has turned out to be remarkably difficult. Important clues about the origin of the FBs can be obtained from looking at the FBs near the Galactic plane. Recent analysis has shown that the residual emission at the base of the FBs (after subtraction of the foreground and background emission) is brighter and extends to higher energies than the spectrum of the FBs at high latitudes. In the talk, I will discuss a new analysis of the gamma-ray emission at the base of the FBs using 8 years of Pass 8 Fermi-LAT data. We confirm that the emission at the base of the FBs has a hard spectrum without a cutoff up to 1 TeV and a greater intensity than at high latitudes. I will discuss possible interpretations of this emission in terms of the leptonic and hadronic models as well as the prospects for detectability of the emission by Cherenkov and neutrino telescopes.

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