Diffuse $\gamma$-ray emission produced by the interaction of cosmic ray particles with matter and radiation in the Galaxy can be used to probe the origin of cosmic rays. With its large field of view and long observation time, the Milagro Gamma Ray Observatory is an ideal instrument for surveying large regions of the Northern Hemisphere sky and for detecting diffuse $\gamma$-ray emission at high energies. Using data collected with the Milagro detector the spatial distribution of the diffuse gamma ray emission near 15 TeV for Galactic longitudes $30^\circ-110^\circ$ and $136^\circ-216^\circ$ is determined and compared to predictions of theoretical models, for example of the GALPROP model (see Fig.1)[1].

In my presentation, I will show Milagro results and how they compare with theoretical models and I will discuss implications of the comparison.

![Figure 1: Source-subtracted Galactic longitude profile of the $\gamma$-ray emission around 15 TeV in the Galactic plane ($b \in [-2^\circ, 2^\circ]$) as measured by Milagro (points with errors) and predicted by GALPROP: the solid line shows the EGRET-optimized model, and the dashed line the conventional model.](image)

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