

Diffuse Gamma-Ray around G25 Region based on LHAASO KM2A and WCDA data

G25 region is a complex region with various objects which can accelerate CRs. G24.7+0.6 is a filled-center SNR with an age of ~ 9500 yr. G25.18+0.26 is an OB association with massive stars. TeV source MAGIC J1835-069 is located between the two objects. RSGC1, one of the most massive star clusters, contains more than 200 massive stars located in the G25 region. There also exist two X-ray PWN candidates, AX J1837.3-0652 and AX J1838.0-0655 which are both adjacent to HESS J1837-069. MAGIC J1837-073 lies in the southern part. The residual GeV gamma-rays are resolved into three extended regions (Sun et al. 2020) of which one has a hard SED without cutoff in the GeV band. Analysing LHAASO data in the TeV can give a crucial constraint on the SED and the physical mechanism.

We analysed LHAASO data through scientific tool provided by Xi Shaoqiang and got preliminary results. At first, we processed the LHAASO data for the full range. The source in G25 region has been in the 1LHAASO catalog, 1LHAASO J1837-0654u. We test single point source, multi point sources, and gaussian disk. The gaussian disk (ra=279.3894, dec=-6.8883, radius=0.3777) is the best-fit model. Then we repeat the process in the energy interval of WCDA (1-25TeV), KM2A (>25TeV), and >100TeV in which a gaussian disk model for this region is the best. These models fitted in different energy are spatially coincident with each other. The SED covering the full energy range as well as partial energy bands is fitted well by the LogParabola spectrum. The spectral index of full-energy SED are $\alpha=3.15$, $\beta=0.29$. The TeV excess is most likely related to the PWN candidate AX J1838.0-0655 or/and RSGC1, which is roughly coincident with previous work.

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