

# The Fermi LAT view of Cygnus: a laboratory to understand cosmic-ray acceleration and transport

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Cygnus X is a conspicuous massive star-forming region in the Local Spur of the Galaxy at  $\sim 1.4$  kpc from the solar system. Gamma-ray observations can be used to trace cosmic rays (CRs) interacting with the ambient gas and low-energy radiation fields. Using the Fermi Large Area Telescope (LAT) we have discovered the presence of a 50-pc wide cocoon of freshly-accelerated CRs in the region bounded by the ionization fronts from the young stellar clusters. On the other hand, the LAT data show that the CR population averaged over the whole Cygnus complex on a scale of  $\sim 400$  pc is similar to that found in the interstellar space near the Sun. We will discuss these results which confirm the long-standing hypothesis that massive star-forming regions host CR factories and which shed a new light on the early phases of CR life in such a turbulent environment.

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