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Observations to Microquasar SS 433 with LHAASO

Micro quasars that are compact binary star systems composed of a stellar-mass black hole or neutron star accreting matter from a companion star exhibit powerful and highly collimated jets of particles and radiation. These micro quasar jets are unique that provide valuable insights into particle acceleration and transport processes under extreme conditions. In this poster, I will present the observations to microquasar jet named SS433 with LHAASO.

SS433 is an unusual and fascinating astronomical object known as a microquasar. SS433 is classified as a binary star system consisting of a massive star and a compact object, most likely a black hole or neutron star. The compact object is accreting matter from the massive star, creating a disk of material around it. One of the most remarkable features of SS433 is the emission of two powerful jets of matter from its central region. These jets are being expelled at relativistic speeds, approaching a significant fraction of the speed of light. The jets are oriented almost perpendicular to the disk of the binary system.

I will explain the observational techniques, including high-energy gamma-ray observations, that have enabled us to review the particle acceleration processes in these jets. Through a combination of WCDA and KM2A results, we explore the east and west lobes of this source.

The results obtained from these investigations contribute to our broader understanding of particle acceleration and transport in high-energy astrophysical environments. Moreover, microquasars serve as analogs for other cosmic phenomena, such as active galactic nuclei and gamma-ray bursts, thereby shedding light on the physical processes that shape the universe's most energetic and dynamic events. This research not only advances our knowledge of microquasar jets but also has implications for fundamental astrophysical processes, cosmic-ray acceleration, and the interplay between matter, radiation, and magnetic fields in extreme environments.

Ultimately, unraveling the mysteries of particle acceleration and transport in microquasar jets deepens our comprehension of the universe's most enigmatic and powerful phenomena and contributes to the broader field of high-energy astrophysics.

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