

## Z213a The Gamma-ray binary LMC P3 as Candidate Cosmic-ray Accelerator

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LMC P3 (HESS J0536–675) is a high-mass X-ray binary embedded in the supernova remnant DEM L241 in the Large Magellanic Cloud, is a source of very-high-energy ( $>100$  GeV) emission. The system is considered to have hosted a past jet, as suggested by the extended diffuse X-ray emission in the remnant. The SNR has CO clouds that are aligned along with the extended X-ray emission similar to the Galactic PeVatron microquasar SS 433. From high-resolution ALMA CO data, we detect clouds exhibiting a narrow, jet-like morphology aligned with the direction of the extended X-ray emission. We detect significantly different physical properties (i.e., increased kinetic temperature and decreased density) for the jet-like clouds compared to the surrounding clumpy clouds, indicating the heating of the jet-like clouds via shock interaction from the jet. We investigate the high-energy X-ray emission from both the compact object and the surrounding SNR using Chandra and NuSTAR observations in order to examine the multiwavelength connection between the jet and the surrounding interstellar medium (ISM). We interpret the jet-like clouds as forming through jet-ISM interaction, based on comparison of our results with theoretical simulations. Our findings suggest that LMC P3 is a strong extragalactic candidate for cosmic-ray acceleration linked to microquasar jets, offering new observational support for the role of microquasars in accelerating cosmic rays.