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## Identification and characterisation of the gamma-ray counterpart of the transitional pulsar candidate CXOU J110926.4–650224

Transitional millisecond pulsars (tMSPs) represent a crucial link between binary pulsars in their rotation-powered and accretion-powered states. During their active X-ray state, the tMSPs are the only low-mass X-ray binary systems that are detected up to GeV energies using the *Fermi Large Area Telescope* (LAT). CXOU J110926.4–650224 is a newly discovered tMSP candidate in an active X-ray state located close to a faint gamma-ray source, listed in the latest release of the *Fermi/LAT* point-source catalogue as 4FGL J1110.3–6501.

Confirming the association between CXOU J110926.4–650224 and the *Fermi* source is a key step towards validating its classification as a tMSP.

In this study, we present an analysis of *Fermi/LAT* data collected from August 2008 to June 2023, for a total of about 15 years, aiming to achieve a more accurate localisation of the gamma-ray source and characterise its spectral properties. By thoroughly reconstructing the gamma-ray background around the source, we obtain a new localisation that matches the position of the X-ray source at the 95% confidence level, with a Test Statistic value  $\sim 40$ . This establishes a possible spatial association between the gamma-ray source and CXOU J110926.4–650224.

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