

ID 99

Tipo de Comunicación: Oral

Sesión Científica: La via lactea y sus componentes

Título: An AGN or a Be star as possible counterparts of 3FGL J0133.3+5930

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Resumen:

We present the current status of our program for cross-identification of unassociated gamma-ray sources at low galactic latitudes. The main motivation for this work is the search for new members of the scarce class of gamma-ray binaries and microquasars. While carrying out this hunt, other unexpected but no less interesting objects can also emerge. Here we report in detail our results in the case of 3FGL J0133.3+5930. A clear counterpart candidate has been identified inside the 95% confidence ellipse of this Fermi LAT source. Its spectral energy distribution, from radio to gamma-rays, is strongly suggestive of an AGN nature. A second counterpart candidate in the same field is the optically bright Be star TYC 3683-985-1, initially suspected to be a new gamma-ray binary. Follow-up optical and spectroscopic observations finally led us to discover that TYC 3683-985-1 is in fact a semi-detached eclipsing binary with two early-type components. Its orbital half-period is remarkably close to an integer number of days, thus rendering it a difficult target to show up as a variable source in automated optical surveys operating on a daily basis. The different possible physical scenarios are discussed.