

Analysis of the binary star TIC 33477093

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The Arcturus stream is an overdensity of stars surrounding the star Arcturus, whose origin remains uncertain. One hypothesis suggests that it could have an extragalactic origin, which would offer a unique opportunity to detect exoplanets originating from outside our Galaxy. After conducting a search for stars and downloading their TESS photometry, we detected that one of the stars (TIC 33477093) shows transit-like signals. Following a thorough analysis, including the use of HARPS spectra, we discovered that it is not an exoplanet in orbit, but rather a close binary system causing anomalous rotation in the primary star. Therefore, we carried out a complete characterization of the system with the aim of establishing it as a reference within the Arcturus Stream, as no other confirmed binary systems are currently known within it.

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