

Dwarf nova EZ Lyncis second visit to instability strip

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Abstract

© 2014 © The Author 2014. Published by Oxford University Press on behalf of the Astronomical Society of Japan. All rights reserved. The analysis of 14 periodograms of EZLyn for data spaced over 565d in 2012-2014 (2-3.5yr after the 2010 outburst) yielded the existence of a stable signal around 100cycles/day (c/d) and three signals around 310c/d, 338c/d, and 368c/d (the corresponding periods are 864s, 279s, 256s, and 235s). We interpret them as independent nonradial pulsations of the white dwarf in EZLyn, but the possibility that a linear combination of a frequency of 100c/d and a harmonic of the orbital period might produce a frequency of 368c/d also cannot be excluded. The signal at 100c/d was detected as a transient during the first stay in the instability strip. The period at 338c/d has been a known nonradial pulsation since EZLyn entered the instability strip after the 2010 outburst. We detected the signals around 310c/d and 368c/d for the first time. We applied the two-dimensional least absolute shrinkage and selection operator (Lasso) analysis for the first time to explore the behavior of these signals on a time scale of hours in nightly runs of observations having a duration of 6-12hr. The Lasso analysis revealed the simultaneous existence of all three frequencies (310c/d, 338c/d, and 368c/d) on a majority of nights of observations, but with variable amplitudes and variable drifts of frequencies by 2%-6% on a time scale of ~5-7hr. The largest drift we detected corresponded to 17.5s in period in ~5hr.

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Keywords

Accretion, Accretion disks, Cataclysmic variables, Novae, Stars: dwarf novae, Stars: individual (EZ Lyncis), Stars: oscillations