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LOW-RESOLUTION SPECTROSCOPIC STUDY OF PULSATING STAR - CC ANDROMEDAE

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CC Andromedae is a δ -Scuti type, a short-period pulsating star with a main pulsation period of 0.1249078 days in the constellation Andromeda. The star has been observed in spectroscopy over the entire pulsation cycle with more than 700 low-resolution spectra in the whole visible range using the 50 cm telescope with a spectrograph at Mount Abu Observatory, Rajasthan, India in 3 consecutive days 10th, 11th, and 12th December 2016. The aim was to determine the excitation temperature profile of the variable star CC Andromedae. The initial data reductions such as flat fielding correction and extraction of spectra were done using the astronomical software, Image Reduction and Analysis Facility (IRAF). The equivalent width of a spectral line represents the energy emission of that particular wavelength. Utilizing the Boltzmann equation, the excitation temperature of the pulsating star was calculated by analysing the equivalent width of hydrogen line profiles (H_α , H_β and H_γ). The light curve of CC And was observed using photometry data obtained from the Transiting Exoplanet Survey Satellite (TESS) mission. Finally, it was determined that the obtained excitation temperature profile is synchronized with the observed light curve of CC And which can be concluded the temperature variation is in phase with the brightness variation of the star. It was determined that selecting Hydrogen lines with larger wavelength differences would give clearer excitation temperature profiles. This association sheds insight into the nature and behaviour of CC And, potentially aids in a better understanding of its dynamics and properties.

Keywords: *δ -scuti stars, pulsating star, excitation temperature, line profiles*