STRUCTURES OF THE QUIET CHROMOSPHERE AND FLARES OF RED DWARF EV LAC OBTAINED FROM OBSERVED EMISSION SPECTRA

E. A. Baranovsky, R. E. Gershberg, and D. N. Shakhovskoy

Crimean Astrophysical Observatory, Ministry of Ukraine for Education and Science
Naukove, 98409 Crimea, Ukraine
e-mail: gershberg@crao.crimea.ua

During spectral observations of the flare red dwarf star EV Lac, carried out at the 2.6-m Shajn reflector, emission profiles of the hydrogen and helium lines have been registered both for the quiet state of the star and for flares. Using the Crimean computation algorithm, the hydrostatic models have been calculated for a homogeneous stellar chromosphere, for a set of active regions on the star and for stellar flares. In all cases regions of a very small temperature gradient were found, and these temperature plateaux are the main contributors to the Balmer emission. Physical parameters, sizes and locations of these regions are confronted with similar structures in the solar atmosphere.

Results of this study are published in Astronomy Reports.