

Chromospheric variabilities of M active stars based on Guoshoujing Telescope

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Abstract. For the M active catalogue of Guoshoujing Telescope (LAMOST), 933 sources are presented in at least two exposures. We found that many M active stars show chromospheric variability in the Ca II H, H α , H β , and H γ lines on short or long timescales.

Keywords. stars: M, stars: activity, stars: chromospheres, stars: spectra

Chromospheric variability of M dwarf stars are very interesting (Hilton *et al.* 2012; Kruse *et al.* 2012; etc). We found 6391 M active candidates (Zhang *et al.* 2012, 2013) from LAMOST spectral survey (Cui *et al.* 2012; Zhao *et al.* 2012; Luo *et al.* 2012; Deng *et al.* 2012). 933 sources are found in at least two exposures, in which 193 with more than 3 three exposures. These spectra, obtained at different times, can be used to examine chromospheric variability. We measured the equivalent widths of the Ca II H, H α , H β , and H γ lines using the program of Hawley *et al.* (2002) and West *et al.* (2011). The wavelength regions used for the continuum and line regions are similar to that of Hilton *et al.* (2012). We found that chromospheric activity of most active stars had changed on either short or long time scales. Figure 1 shows an example for LAMOST J045556.06+303620.6 in Ca II H, H α , H β , and H γ lines.

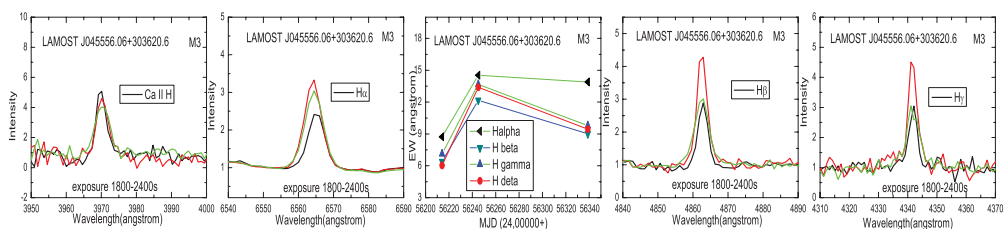


Figure 1. The spectra variation and EWs light curves of LAMOST J045556.06+303620.6.

Acknowledgements This work is supported by the NSFC of No 10978010 and 11263001.

References

- Cui X. Q., Zhao Y. H., Chu Y. Q., *et al.*, 2012, RAA, 12, 1197
Hilton E. J., West A. A., Hawley S. L., *et al.*, 2010, AJ, 140, 1402
Hawley S. L., Covey K. R., Knapp G. R., *et al.*, 2002, AJ, 123, 3409
Luo A. L., Zhang H. T., Zhao, Y. H., Zhao G., *et al.*, 2012, RAA, 12, 1243
Kruse E. A., Berger E., Knapp G. R., *et al.*, 2010, AJ, 722, 1352
West A. A., Morgan D. P., Bochanski J. J., *et al.*, 2011, AJ, 141, 97
Zhang L. Y., Shi J. R., Zhao J. K., Luo A. L., *et al.*, 2012, IAU294, 209
Zhang L. Y., Zhang G. Y., Shi J. R., Luo A. L., *et al.*, 2013, IAU298, in print
Zhao G., Zhao Y. H., Chu Y. Q., *et al.*, 2012, RAA, 12, 723