A 10-hour period revealed in optical spectra of the highly variable WN8 Wolf-Rayet star WR 123

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Aims. What is the origin of the large-amplitude variability in Wolf-Rayet WN8 stars in general and WR123 in particular? A dedicated spectroscopic campaign targets the ten-hour period previously found in the high-precision photometric data obtained by the MOST satellite. Methods. In June-August 2003 we obtained a series of high signal-to-noise, mid-resolution spectra from several sites in the 4000 - 6940 A domain. We also followed the star with occasional broadband (Johnson V) photometry. The acquired spectroscopy allowed a detailed study of spectral variability on timescales from ~ 5 minutes to months. Results. We find that all observed spectral lines of a given chemical element tend to show similar variations and that there is a good correlation between the lines of different elements, without any significant time delays, save the strong absorption components of the Hei lines, which tend to vary differently from the emission parts. We find a single sustained periodicity, P ~ 9.8 h, which is likely related to the relatively stable pulsations found in MOST photometry obtained one year later. In addition, seemingly stochastic, large-amplitude variations are also seen in all spectral lines on timescales of several hours to several days.

Reference: A&A Research Notes, in press
Status: Manuscript has been accepted

Weblink: http://arxiv.org/abs/1104.5182

Comments:

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