

Analysis of magnetic activity of the rapidly rotating stars He 373 and AP 225

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Abstract

© 2017, Pleiades Publishing, Ltd. Spectroscopic and photometric data for the two rapidly rotating members of the α Persei cluster He 373 and AP 225 are analyzed. Improved estimates have been obtained for the projected equatorial rotation velocities: $v \sin i = 164$ km/s for He 323 and $v \sin i = 129$ km/s for AP 225. Multi-band photometric mapping is used to map the spot distributions on the surfaces of the two stars. The fractional spotted areas S and mean temperature difference ΔT between the unspotted photosphere and the spots are estimated ($S = 7\%$ and $\Delta T = 1000$ K for He 373; $S = 9\%$ and $\Delta T = 800$ K for AP 225). The $H\alpha$ line profiles of both stars have variable emission components whose widths are used to deduce the presence of extended regions of emission reaching the corotation radius.

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