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Starspots and active regions on the chromospherically active binary VY Ari

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Quasi-simultaneous UBVRI photometric, polarimetric and Hα spectroscopic observations of the chromospherically active binary star VY Ari are presented. The photometric variability of the star can be described by a zonal spottedness model. Spotted regions occupy up to 32 % of the total stellar surface. The temperature difference between the unspotted photosphere and starspots is about 1300 K. Starspots are localized at middle-low latitudes. We detected confidently the intrinsic broad-band linear polarization of the stellar light in all UBVRI filters, and its rotational modulation due to local solar-type magnetic fields in the U band, with a filling factor up to 60 % of the total stellar surface. The spectroscopic observations show in some epochs the presence of chromospherically active regions with a higher electron density (plages). Both magnetic fields and plages concentrated in a few epochs near the mostly spotted stellar longitudes.