Detection of magnetic fields in He-rich early B-type stars using HARPSpol

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We focus on early-B type stars with helium overabundance, for which the presence of a magnetic field has not previously been reported. The measurements were carried out using high-spectral-resolution spectropolarimetric observations obtained with the High Accuracy Radial velocity Planet Searcher (HARPS) in polarimetric mode, installed at the ESO La Silla 3.6m telescope. For five He-rich stars, the longitudinal magnetic field was detected for the first time. For one target, HD58260, the presence of a longitudinal magnetic field of the order of 1.8 kG has already been reported in the literature, but the magnetic field has remained constant over tens of years. Our measurement carried out using the polarimetric spectra obtained in 2015 March indicates a slight decrease of the longitudinal magnetic field strength compared to measurements reported in previous works. A search for periodic modulation in available photometric data allowed us to confidently establish a period of 2.64119Â±0.00420 d in archival ASAS3 data for CPD -27â˜ 1791. No period could be determined for the other five stars. The obtained results support the scenario that all He-rich stars are detectably magnetic and form an extension of the Ap star phenomenon to higher temperatures.

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Comments:

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