

Next Generation mapping of the magnetic fields and chemical spots of Ap stars

James Silvester^{1,2}, Gregg Wade², Oleg Kochukhov³, John Landstreet⁴, Stefano Bagnulo⁵, David Hanes¹

1 - Queen's University, Canada

2 - The Royal Military College of Canada

3 - Uppsala University

4 - The University of Western Ontario

5 - Armagh Observatory

We will describe a project using the technique of Magnetic Doppler Imaging (MDI) to create assumption-free vector magnetic field maps and chemical surface structure maps of chemically peculiar A and B type (or Ap) stars. We have exploited the latest generation of spectropolarimeters (Narval at the Pic du Midi observatory, and ESPaDOnS at the Canada-France-Hawaii telescope), to obtain high-resolution time series of Stokes IQUV spectra of a selection of Ap stars.

We will present the latest longitudinal magnetic field and linear polarisation measurements for all 7 target stars, including a comparisons with the previous generation of observations. Magnetic vector and surface abundances maps for 49 Cam and HD 32633 (obtained using the ground-breaking inversion techniques introduced by Kochukhov et al. in 2002) will be presented, with discussion on the analysis which will be implemented to investigate links between the observed magnetic field and the chemical abundance structures in the photosphere.