



The spots on Ap stars

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The upper main sequence magnetic chemically peculiar (Ap) stars exhibit a non-uniform distribution of chemical elements across their surfaces and with height in their atmospheres. These inhomogeneities, responsible for the conspicuous photometric and spectroscopic variation of Ap stars, are believed to be produced by atomic diffusion operating in the stellar atmospheres stabilized by multi-kG magnetic fields. Here I present an overview of the current state-of-the-art in understanding Ap-star spots and their relation to magnetic fields. In particular, I highlight recent 3-D chemical spot structure studies and summarize magnetic field mapping results based on the inversion of the full Stokes vector spectropolarimetric observations. I also discuss a puzzling new type of spotted stars, HgMn stars, in which the formation and evolution of heavy element spots is driven by a poorly understood mechanism, apparently unrelated to magnetic fields.

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