Spectroscopic Variability of Magnetic White Dwarfs

Adam Moss[1], Mukremin Kilic[1], Pierre Bergeron[2]

[1] *Department of Physics and Astronomy, University of Oklahoma, Norman, OK, USA*
[2] *Department of Physics, University of Montreal, Montreal, Quebec, Canada*

The origin of strong magnetic fields (B $\geq$ 1MG) in white dwarfs (WDs) remains a mystery. One proposed scenario is the creation via a double WD merger. Such products are expected to rotate on the order of minutes and result in a complex magnetic field structure. Modulations in this field can manifest in the Zeeman-split absorption lines, with shifting line centers as the WD rotates. Here we report our findings on 7 WDs with rapidly shifting Zeeman-split Hα components in their spectra. All data was taken with the Gemini Observatory 8-meter telescope. Our Gemini spectroscopy show several of our targets rotate on the order of minutes, suggesting a double WD merger origin. We fit our spectra with an offset dipole model and find that the spectroscopic variations arise from the changes in the average field strength as the WD rotates, further confirming the fast-rotating nature and complex field structure of these objects.