

# CONSISTENT MODEL FITS TO THE COMPLETE SPECTRA OF COOL DQ/DQP STARS

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We discuss a detailed analysis of the molecular carbon bands and successful fits with our atmosphere models to the complete spectra of series of cool, carbon-rich white dwarfs (DQs and DQpes) in the effective temperature range 7000 K - 4500 K, including spectra of WD0038-226 and WD1008+290 stars, which could not be successfully fitted so far. These studies represent the first, consistent, quantitative level characterization of extremely dense, fluid-like atmospheres of cool, carbon-rich white dwarfs. We will discuss the importance of the different, high density effects we have introduced over the last two decades and their clear manifestation in the analyzed spectra. Among other effects, we will discuss the first detection of pressure shifts of the Deslanders-DAzambuja bands in DQp stars. The shifts are consistent with the shifts of Swan bands and could be accurately simulated with the same pressure distortion model of Kowalski *A&A* 519, L8 (2014). We confirm that the C/He content in the carbon-rich atmosphere stars decreases with effective temperature and that there is no change in the trend when the transition from DQ to DQp white dwarfs occurs. Last but not least, the successful fits to the complete spectra and spectral energy distributions of cool DQ/DQp stars shed a new light on deciphering the nature of ultracool white dwarf stars.