

GW VIR INSTABILITY STRIP IN THE LIGHT OF NEW OBSERVATIONS OF PG 1159 STARS

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The first of the three classical instability strips of white dwarf pulsators, the GW Vir strip, contains stars of PG 1159 and [WC] spectral types. These hot and compact PG 1159 stars (H-deficient, He-/C-/O-rich) are thought to be formed as a result of a “born-again” episode: either a very late thermal pulse experienced by a hot white dwarf during its early cooling phase, or a late thermal pulse that occurs during the post-AGB evolution when H burning is still active. This evolutionary history is reflected in their chemical abundances. In contrast to the purity of the DAV and DBV instability strips, only some 30% of the stars in the GW Vir domain pulsate. Consequently, the DA and DB pulsators are otherwise normal white dwarfs and their interiors represent the interiors of all white dwarfs, which is not the case for the PG 1159 stars. While several explanations for this discrepancy have been proposed, the case of nitrogen is particularly interesting. There is an observed nitrogen dichotomy: N-rich stars are pulsators, whereas N-poor stars are all nonpulsators, with one culprit: N-rich nonpulsator PG 1144+005. With our discovery of pulsations in PG 1144+005 the current picture appears complete, but is based on a small number of objects, as only 14 out of 55 PG 1159 stars have both information about variability as well as the nitrogen abundance. I will present the results of our survey of PG 1159 stars and discuss their implications.