IRREGULARITY INTERPRETED AS LOW DIMENSION CHAOS FOR CONVECTIVE MODELS OF W VIR VARIABLES

S. Ami Glasner
Physics Department
University of Florida

J. Robert Buchler
Physics Department
University of Florida

Abstract. Linear and nonlinear pulsational properties of convective stellar envelopes relevant for W Vir and RV Tau stars are surveyed. All models show the same trend to pass from regular to irregular behavior when a control parameter is changed (the effective temperature). The transition to irregular pulsation follows well known systematic routes to chaos (as in the radiative case). Some rich structures were found in special cases; they deserve further research. We show that the chaotic behavior is sustained even when convection is taken into account. The effect of the inclusion of time dependent convection shows up mostly as a shift of Kovacs and Buchler (Ap.J 1988) results in the parameters plane (L, T_{eff}) towards more realistic models.

https://doi.org/10.1017/S0252921100011751 Published online by Cambridge University Press