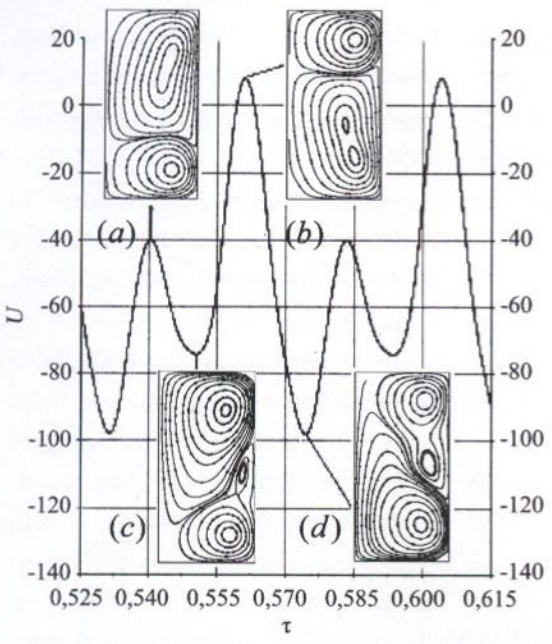

Fig. 7. Time evolution of the dimensionless radial velocity U for Ha=60 and Gr_{Cr} =6×10^6 at monitoring point (R=0.450, Z=0.923). The iso-contours of the dimensionless stream function ψ for various dimensionless times (τ_a , τ_b , τ_c , τ_d) are shown inside the Figure 7.

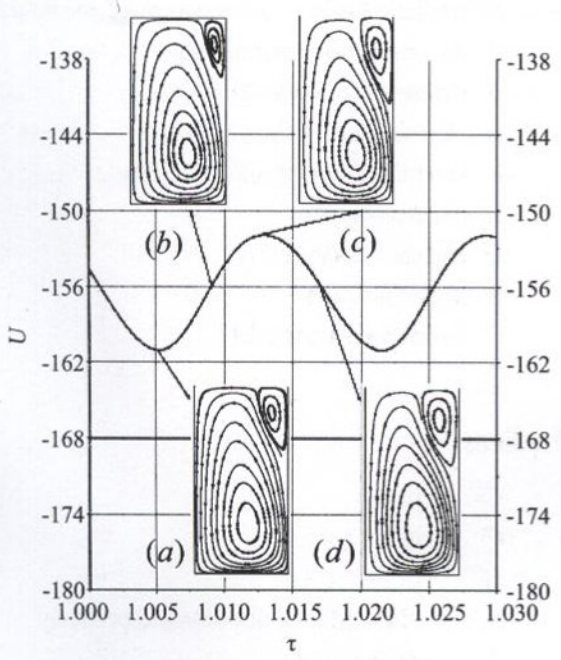

Fig. 8. Time evolution of the dimensionless radial velocity U for Ha=0 and Gr_{Cr} =0.8×10^6 at monitoring point (R=0.450, Z=0.923). The iso-contours of the dimensionless stream function ψ for various dimensionless times (τ_a, τ_b, τ_c, τ_d) are shown inside the Figure 8.

character and the oscillatory flow, corresponding to a dominant frequency with its harmonics. Figures 10a and b show the existence of three peaks, however, the value of the first peak f_{cr} = 57.91 for Ha = 30 is most dominant, which corresponds to one dominant period for this flow mode $\xi = 1 / f_{Cr}$.

By examining the stability diagram f_{Cr} –Ha (Fig. 11), we can conclude the dependence of the dominant

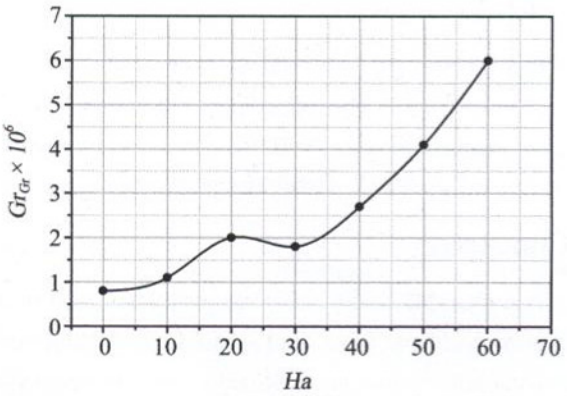

Fig. 9 . Stability diagram (Gr_{Cr} – Ha).

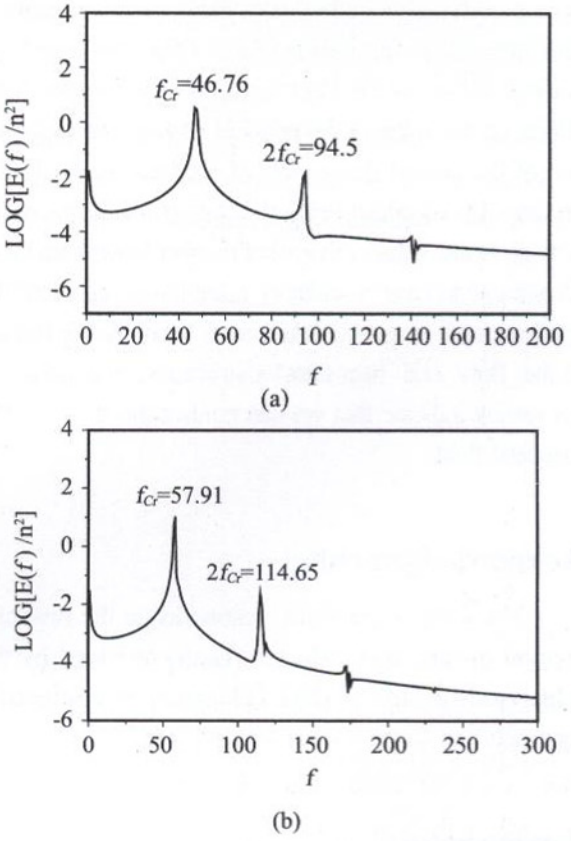

Fig. 10. Power spectrum of the dimensionless radial velocity U : (a) Ha = 30 and Gr_{Cr} = 1.9×10^6 ; (b) Ha = 40 and Gr_{Cr} = 2.7×10^6.