Movie Captions

August 4, 2022

1 Movie 1

Link between inflection points in the Sexl–Womersley profile (U) and production and dissipation ($P^{'}$, $D^{'}$, see eq. (3.2)) of kinetic energy contained in the helical perturbations in the $r-z-$plane at $\theta = 0$. Results correspond to an integration of the linearised Navier–Stokes equations, eq. (2.2), using the optimal helical perturbation as initial condition for a sine wave pulsation at $Re = 2000$, $Wo = 11$ and $A = 1$. Yellow lines represent $U(r,t)$ scaled in arbitrary units and circles represent the existence and location (r_i) of inflection points. Yellow circles additionally satisfy the Fjørtoft criterion locally. The production and dissipation are normalised by the maximum value of production at $t_0/T = 0.5$, where the simulation was started.

2 Movie 2

Link between inflection points in the Sexl–Womersley profile (U) and production ($P^{'}$, see eq. (3.2)) of kinetic energy contained in the helical perturbations in the $r-z-$plane at $\theta = 0$. Results correspond to an integration of the Navier–Stokes equations, eq. (2.1), using the optimal helical perturbation localised and scaled to $10^{-2} \cdot u_s$ magnitude as initial condition for a sine wave pulsation at $Re = 2000$, $Wo = 11$ and $A = 1$. Yellow lines represent $U(r,t)$ scaled in arbitrary units and circles represent the existence and location (r_i) of inflection points in the laminar profile. Yellow circles additionally satisfy the Fjørtoft criterion locally. The production is normalised by the maximum value of production at $t_0/T = 0.5$, where the simulation was started