in the coupled system (5.12)+(5.17) with $\overline{\zeta}$, and consider the following control system conjugate to (5.12)+(5.17):

$$\begin{aligned}
w_1' &= w_2, \\
w_2' &= -4w_1 - 1.5w_2 - 0.02w_1^3 + \cos t + \nu_1\left(t, \overline{\zeta}\right), \\
w_3' &= w_4 + 0.7w_1^2 - 1.2w_1, \\
w_4' &= -2.5w_3 - 3.5w_4 + 0.01w_3^3 - 1.5\cos(\pi t) + \nu_2\left(t, \overline{\zeta}\right) + \arctan(w_2).
\end{aligned} \tag{6.20}$$

Figure 5 represents the time series of the w_3-coordinate of the control system (6.20) corresponding to the initial data $\zeta_0 = 0.56$, $w_1(t_0) = 0.24$, $w_2(t_0) = 0.17$, $w_3(t_0) = 0.43$, $w_4(t_0) = 0.04$, where $t_0 = 0.56$. The OGY algorithm is applied around the fixed point $2.9/3.9$ of the logistic map (1.5) by setting $\kappa^{(j)} \equiv 2.9/3.9$ in equation (6.18). The control is switched on at $t = \zeta_{50}$ and switched off at $t = \zeta_{400}$, i.e., we take $\overline{\mu}_i = 3.9$ for $0 \leq i < 50$ and $i \geq 400$ in (6.19). Moreover, the value $\varepsilon = 0.08$ is used in the simulation. One can observe in Figure 5 that one of the quasi-periodic solutions embedded in the chaotic attractor of (5.17) is stabilized. A transient time occurs after the control is switched on such that the stabilization becomes dominant approximately at $t = 124$ and prolongs approximately till $t = 477$ after which the chaotic behavior develops again. Moreover, the stabilized quasi-periodic solution of (5.17) is represented in Figure 6. Figures 5 and 6 manifest that the proposed numerical technique, which is based on the OGY algorithm, is appropriate to control the chaos of system (5.17).

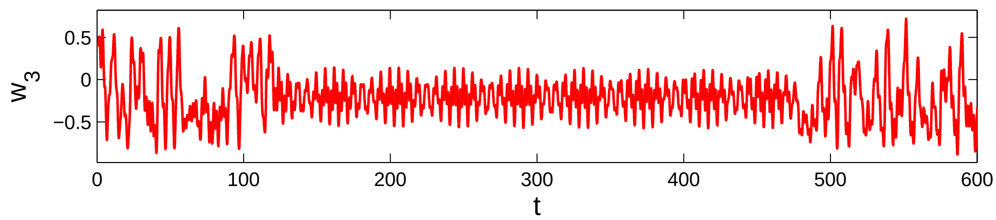

Figure 5: Control of the chaos of (5.17) by means of the OGY method applied to the map (1.5) around its fixed point $2.9/3.9$. The value $\varepsilon = 0.08$ is used, and the control is switched on at $t = \zeta_{50}$ and switched off at $t = \zeta_{400}$.

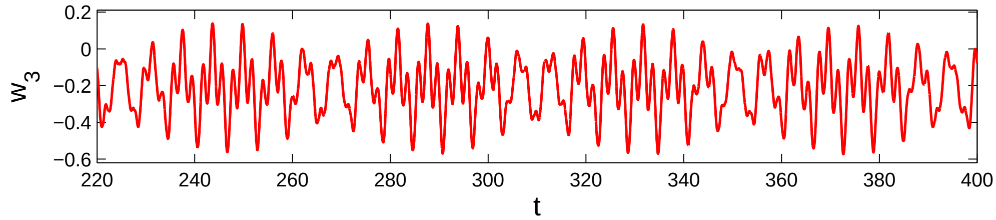

Figure 6: The stabilized quasi-periodic solution of (5.17).