



Contribution ID : 172

Type : Poster

Experimental Study of Intermittent Chaotic Synchronization in Duffing Circuits

We present an experimental study of two coupled Duffing oscillators in which intermittent chaotic synchronization emerges when sweeping the excitation parameters of the second oscillator, while keeping (F_1, Ω_1) fixed and varying (F_2, Ω_2) . We employ three complementary tools: (i) a direct comparison of $x_1(t)$, $x_2(t)$, and the synchronization error $e(t)$, aligned using an optimal time delay τ^* , to identify on-off synchronization windows; (ii) the relative phase $\Delta\theta(t)$, obtained through the Hilbert transform, together with the phase-locking index R ; and (iii) an analysis of the synchronization probability. We observe an error floor that increases with the parameter mismatches $(\Delta F, \Delta\Omega)$, together with the coexistence of phase synchronization. In addition, the durations of the laminar phases exhibit power-law tails, consistent with the characteristic behavior of on-off intermittency.

Primary author(s) : LIBERONA, Sebastian (Universidad de Tarapacá); Dr MELLADO HUMIRE, Fernando (Universidad de Tarapacá)

Presenter(s) : LIBERONA, Sebastian (Universidad de Tarapacá)

Session Classification : Poster Miscellaneous