C. Property 3

By connecting in cascade a $n_N$-dimensional nonlinear system with Liapunov exponents $L_1, L_2, \ldots, L_{n_N}$ and a $n_L$-dimensional linear system with eigenvalues $\lambda_1, \lambda_2, \ldots, \lambda_{n_L}$, we obtain a $(n_N + n_L)$-dimensional nonlinear system with Liapunov exponents $L_1, L_2, \ldots, L_{n_N}, \lambda_1, \lambda_2, \ldots, \lambda_{n_L}$.

It is clear that, if the nonlinear system has the largest Liapunov exponent greater than zero, the same will be for the whole system. The same result holds in the continuous-time case.

IV. Conclusion

In this letter, motivated by a recent paper [1], it has been pointed out why a chaotic signal passed through a LTI filter remains chaotic, regardless of the nature of the chaotic signal itself and of the order of the filter. It is worth noticing that, as several examples in the literature show more or less explicitly [4], [5], LTI filters (or even LTI nondynamic controllers) can actually tame chaos if they are connected to the chaotic nonlinear system in a feedback loop, instead of a cascade. This obviously requires the availability of a control variable on the nonlinear system, contrarily to what assumed in [1].

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REFERENCES


Correction to "Dynamics of a Minimal Power System Invariant Tori and Quasi-Periodic Motions"

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In the above paper, Figs. 7, 8, and 9 appeared incorrectly. The corrected version appears here.