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Experimental robust synchronization of hyperchaotic circuits. (English) Zbl 1179.37047
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A strategy for the design of an observer for hyperchaotic circuits is discussed. In particular, the proposed strategy is based on the Master Stability Function (MSF) approach. The robustness of synchronization in the presence of parametric uncertainties in the observed systems is investigated, both numerically and experimentally. The experiment is performed through the electrical analogue of a recently introduced Lorenz-like system able to show hyperchaotic behavior. Dealing with real circuit components, the two coupled circuits cannot be identical, due to the tolerances in electrical components. However, the study performed and the results obtained show that a suitable level of synchronization can also be reached in the presence of parameter mismatches. This allows to say that the MSF approach is a robust observer design tool for critical systems such as hyperchaotic ones.

Reviewer: [Eugene Ershov \(St. Petersburg\)](#)

MSC:

[37D45](#) Strange attractors, chaotic dynamics of systems with hyperbolic behavior

Cited in **19** Documents

Keywords:

[hyperchaos](#); [nonlinear dynamics](#); [synchronization](#); [robustness](#); [nonlinear circuits](#)

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