

Abstract Submitted
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Chaos computing in hybrid digital-analog systems¹ VIVEK KOHAR, BEHNAM KIA, North Carolina State University, Raleigh, NC 27695-8202, JOHN F. LINDNER, The College of Wooster, Wooster, OH 44691, WILLIAM L. DITTO, North Carolina State University, Raleigh, NC 27695-8202 — Nonlinear dynamical systems, especially when operating in chaotic regime, are very sensitive to noise and the deviations due to noise restrict the exploitation of the large number of dynamical behaviors contained in these systems. We discuss the super-stability of some initial conditions of nonlinear dynamical systems ² and how such initial conditions can be utilized in chaos computing to implement all Boolean functions in hybrid digital-analog systems ³ consisting of digital AND gates and a 3–transistor analog circuit. We further discuss the super-linear scaling of noise robustness of these super-stable initial conditions when a number of identical nonlinear dynamical systems are coupled together in various network topologies ⁴.

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²V. Kohar, B. Kia, J. Lindner, W. Ditto Phys. Rev. E **93**, 032213 (2016).

³V. Kohar, B. Kia, J. Lindner, W. Ditto, (submitted).

⁴V. Kohar, S. Kia, B. Kia, J. Lindner, W. Ditto Nonlinear Dynamics, **84**, 1805-1812 (2016).

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