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Title:	Suppression of chaos through coupling to an external chaotic system
Authors:	Chaurasia, S.S. (/jspui/browse?type=author&value=Chaurasia%2C+S.S.) Sinha, Sudeshna (/jspui/browse?type=author&value=Sinha%2C+Sudeshna)
Keywords:	Oscillators Chaotic Explore
Issue Date:	2017
Publisher:	Springer Link
Citation:	Nonlinear Dynamics,87(1), pp.159-167.
Abstract:	We explore the behaviour of an ensemble of chaotic oscillators diffusively coupled only to an external chaotic system, whose intrinsic dynamics may be similar or dissimilar to the group. Counter-intuitively, we find that a dissimilar external system manages to suppress the intrinsic chaos of the oscillators to fixed point dynamics, at sufficiently high coupling strengths. So, while synchronization is induced readily by coupling to an identical external system, control to fixed states is achieved only if the external system is dissimilar. We quantify the efficacy of control by estimating the fraction of random initial states that go to fixed points, a measure analogous to basin stability. Lastly, we indicate the generality of this phenomenon by demonstrating suppression of chaotic oscillations by coupling to a common hyper-chaotic system. These results then indicate the easy controllability of chaotic oscillators by an external chaotic system, thereby suggesting a potent method that may help design control strategies.
URI:	<a href="https://link.springer.com/article/10.1007/s11071-016-3033-5">https://link.springer.com/article/10.1007/s11071-016-3033-5</a> ( <a href="https://link.springer.com/article/10.1007/s11071-016-3033-5">https://link.springer.com/article/10.1007/s11071-016-3033-5</a> ) <a href="http://hdl.handle.net/123456789/2641">http://hdl.handle.net/123456789/2641</a> ( <a href="http://hdl.handle.net/123456789/2641">http://hdl.handle.net/123456789/2641</a> )
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