Title:	Asymmetry induced suppression of chaos
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Abstract:	We explore the dynamics of a group of unconnected chaotic relaxation oscillators realized by mercury beating heart systems, coupled to a markedly different common external chaotic system realized by an electronic circuit. Counter-intuitively, we find that this single dissimilar chaotic oscillator manages to effectively steer the group of oscillators on to steady states, when the coupling is sufficiently strong. We further verify this unusual observation in numerical simulations of model relaxation oscillator systems mimicking this interaction through coupled differential equations. Interestingly, the ensemble of oscillators is suppressed most efficiently when coupled to a completely dissimilar chaotic external system, rather than to a regular external system or an external system identical to those of the group. So this experimentally demonstrable controllability of groups of oscillators via a distinct external system indicates a potent control strategy. It also illustrates the general principle that symmetry in the emergent dynamics may arise from asymmetry in the constituent systems, suggesting that diversity or heterogeneity may have a crucial role in aiding regularity in interactive systems.
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