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Publisher's Note: Self-organized critical system with no stationary attractor state [Phys. Rev. E **65**, 036147 (2002)] *(1 page)* . . . . . 059901(E)
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Erratum: Rayleigh-Taylor instability in a sedimenting suspension [Phys. Rev. E **65**, 011404 (2002)] *(1 page)* . . . . . 059902(E)
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Erratum: Fully compact higher-order computation of steady-state natural convection in a square cavity [Phys. Rev. E **64**, 066703 (2001)] *(1 page)* . . . . . 059903(E)
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