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ERRATA

- Erratum: Shear-induced instabilities in layered liquids [Phys. Rev. E **66**, 061707 (2002)] (*1 page*) 049901(E)
 Günter K. Auernhammer, Helmut R. Brand, and Harald Pleiner
- Erratum: Kinetic theory for flows of nonhomogeneous rodlike liquid crystalline polymers with a nonlocal intermolecular potential [Phys. Rev. E **65**, 051504 (2002)] (*1 page*) 049902(E)
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Erratum: Dielectrophoretic manipulation of macromolecules: The electric field [Phys. Rev. E 64 , 026605 (2001)] (<i>2 pages</i>)	049904(E)
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Publisher's Note: Random matrices with correlated elements: A model for disorder with interactions [Phys. Rev. E 71 , 026226 (2005)] (<i>1 page</i>)	049905(E)
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