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- Asymptotic decay of pair correlations in a Yukawa fluid (*4 pages*) 027401
 P. Hopkins, A. J. Archer, and R. Evans

Classical physics, including nonlinear media and photonic materials

- Band-gap engineering in two-dimensional semiconductor-dielectric photonic crystals (*4 pages*) 027601
 M. S. Kushwaha and G. Martinez

ERRATA

- Erratum: Rapid self-organized criticality: Fractal evolution in extreme environments [Phys. Rev. E **70**, 036118 (2004)] (*1 page*) 029901(E)
 Julianne D. Halley, Andrew C. Warden, Suzanne Sadedin, and Wentian Li
- Erratum: Coupled oscillator systems of cultured cardiac myocytes: Fluctuation and scaling properties [Phys. Rev. E **70**, 021904 (2004)] (*1 page*) 029902(E)
 Mitsuru Yoneyama and Koichi Kawahara