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**Balakrishnan, R.; Ranganathan, K.**

**A textbook of graph theory. 2nd ed.**

Universitext. New York, NY: Springer (ISBN 978-1-4614-4528-9/pbk; 978-1-4614-4529-6/ebook). xi, 292 p. (2012).

The first edition of this text was reviewed in [Zbl 0938.05001]. The chapter on graph colorings has been expanded with material on b-colorings and homomorphisms, among other things. There are also new chapters devoted to two areas of considerable research activity in recent years. One of these presents a number of relations involving domination-type parameters; and, in particular, contains the Barkalkin-German proof that Vizing's conjecture on the domination number of the Cartesian product of two graphs holds for decomposable graphs. The other presents results on spectral properties of various graphs, including a proof of Sachs's theorem on the spectrum of the line graph of a regular graph. A parameter borrowed from chemistry, the energy of a graph, is also defined and results on this parameter are obtained for certain graphs. The list of references now contains 195 items.

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*Classification:* K35

*Keywords:* directed graphs; connectivity; trees; independent sets; matchings; Eulerian graphs; Hamiltonian graphs; colorings; planar graphs; triangulated graphs; domination in graphs; spectral properties of graphs  
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