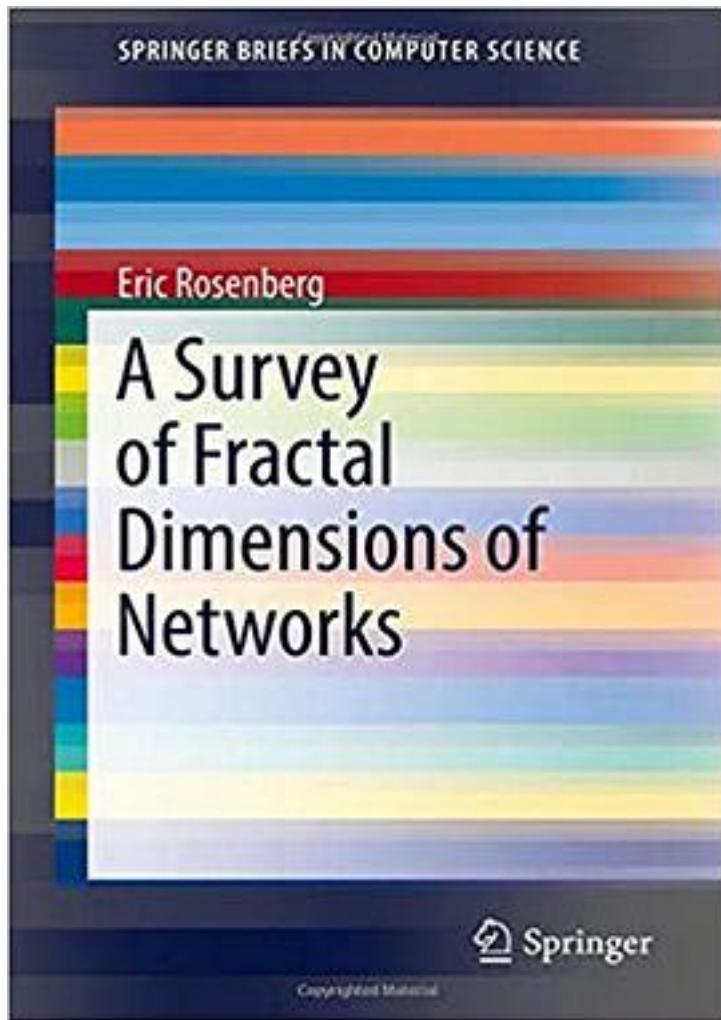


A Survey of Fractal Dimensions of Networks



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Many different fractal dimensions have been proposed for networks. In A Survey of

Fractal Dimensions of Networks the theory and computation of the most important of these dimensions are reviewed, including the box counting dimension, the correlation dimension, the mass dimension, the transfinite fractal dimension, the information dimension, the generalized dimensions (which provide a way to describe multifractals), and the sandbox method (for approximating the generalized dimensions). The book describes the use of diameter-based and radius-based boxes, and presents several heuristic methods for box counting, including greedy coloring, random sequential node burning, and a method for computing a lower bound. We also discuss very recent results on resolving ambiguity in the calculation of the information dimension and the generalized dimensions, and on the non-monotonicity of the generalized dimensions.

Anyone interested in the theory and application of networks will want to read this Brief. This includes anyone studying, e.g., social networks, telecommunications networks, transportation networks, ecological networks, food chain networks, network models of the brain, or financial networks.

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