Using D-spectra (Signatures) in Network Monte Carlo: Estimation of System Reliability and Component Importance

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We present a combinatorial definition of network–type system destruction spectrum (signature) and component importance D-spectra, and demonstrate how Birnbaum importance measures (BIM's) can be expressed via these spectra. We demonstrate an efficient algorithm which calculates simultaneously system reliability and BIM's for all its components.

Use of BIM's in optimal system design is discussed.