Quantitative
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Spectral Expansion Solution for a Class of Markov Models: Application and Comparison with the Matrix-Geometric Method

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Abstract Many two-dimensional Markov models whose state space is a semi-infinite strip (i.e. finite in one dimension and infinite in the other) can be solved efficiently by means of spectral expansion. This method and its application are described in the context of an $M/M/N$ queue with general breakdowns and repairs. The results of experiments aimed at evaluating the relative merits of the spectral expansion method and the matrix-geometric solutions are also presented.

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