Reflecting Diffusions and Queueing Networks[1]

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Abstract

Queueing networks are used in modelling complex processing networks such as those occurring in computer systems, telecommunications and manufacturing. Frequently these models cannot be analyzed exactly and one is led to seek more tractable approximations. Certain diffusion processes, known as semimartingale reflecting Brownian motions (SRBMs), have been proposed as approximations for heavily loaded queueing networks. Limit theorems to justify these approximations have only been proved in some cases. Indeed, since a surprising example of Dai and Wang [**?**], it has been known that these approximations are not always valid and a challenging open problem has been that of establishing general conditions under which they do apply. Recent progress on this problem and related theory for SRBMs is described here.

For the full text of this paper, see the Proceedings of the International Congress of Mathematicians, 1998.

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