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Performance Bounds for Queues Via Generating Functions

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Abstract

Modern applications, e.g. vlsi manufacturing, give rise to complicated queueing models, often of the re-entrant type. Their complexity, together with implications of their performance, renewed interest in their performance and the computation of good control (e.g. scheduling) policies. Recent work concentrated on computable (mostly linear) performance bounds. We show that the linear bounds can be obtained naturally, and under weaker assumptions, using generating function techniques. This approach gives rise to a new class of bounds, on performance over busy cycles.