Asymptotic inversion of the Erlang B formula

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Abstract: The Erlang B formula represents the steady-state blocking probability in the Erlang loss model or $M/M/s/s$ queue. We derive asymptotic expansions for the offered load that matches, for a given number of servers, a certain blocking probability. In addressing this inversion problem we make use of various asymptotic expansions for the incomplete gamma function. A similar inversion problem is investigated for the Erlang C formula.

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