

Asymptotic Upper Bounds for the Probability of Buffer Overflow of a Telecommunication System

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One of the most important tasks in analyzing the operation of a telecommunications system is to assess the quality of service of this system. For this, the probability of a system buffer overflow is often used. It is rarely possible to calculate it explicitly, so one or another estimate of this characteristic is used.

In our report, we consider a system whose input load is the sum of some average load and the sum of independent fractional Brownian motion and stable Levy motion. The system has one service device with a service intensity of $C > 0$. When $r = C - m > 0$, there is a stationary mode. Let Q be the maximum load in stationary mode. We are interested in the value $P(Q > b)$ for large b . Earlier, we obtained lower asymptotic estimates of this value. In our report, we propose some upper asymptotic estimates. Both upper and lower bounds have a power order. The proof method is based on Slepian's theorem (1962) and some ideas from the work by K. Debicki, Z. Michna, T. Rolski (see [1]).

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References

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