

**Willmot, Gordon E.****A Laplace transform representation in a class of renewal queueing and risk processes.**(English) [Zbl 0942.60086](#)*J. Appl. Probab.* 36, No. 2, 570-584 (1999).

It is well-known that the probability  $\psi(x)$  that the equilibrium waiting time in the G/G/1 queue exceeds  $x$  may be expressed as the tail of a compound geometric distribution,  $\sum (1 - \rho)\rho^n \overline{H}^{*n}(x)$ ,  $x > 0$ , where  $H(x)$  is a distribution function [see *P. Embrechts, C. Klüppelberg* and *T. Mikosch*, "Modelling extremal events for insurance and finance" (1997; [Zbl 0873.62116](#))]. The author considers queueing processes in which the inter-arrival distributions have rational Laplace-Stieltjes transforms and finds the Laplace transform of  $H(x)$  which can be inverted easily leading to the analytical properties of  $\psi(x)$ . Special cases are considered.

Reviewer: [P.R.Parthasarathy \(Madras\)](#)**MSC:**[60K25](#) Queueing theory (aspects of probability theory)[60K30](#) Applications of queueing theory (congestion, allocation, storage, traffic, etc.)Cited in **1** ReviewCited in **15** Documents**Keywords:**[failure rate](#); [Erlang distribution](#); [Lagrange interpolation](#)**Full Text:** [DOI](#)