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Convolution of geometrics and a reliability problem. (English) Zbl 0947.62071
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Summary: In single-shot expensive tests of a destructive nature, an inverse sampling scheme is often pursued in order to use the available resources efficiently. This is particularly relevant for evaluating reliabilities for systems that are subjected to test-analyze-and-fix programs at successive stages, which cause a change in the failure probabilities across different stages. This note presents an elementary derivation of the distribution of the number of failures under this construct. A numerical illustration is presented by means of a discrete reliability growth model used in the literature. A correspondence with the well-studied pure birth process is pointed out.

MSC:

62N05 Reliability and life testing

60J80 Branching processes (Galton-Watson, birth-and-death, etc.)

Cited in **1** Review
Cited in **14** Documents

Keywords:

nonidentical geometrics; reliability growth; inverse sampling; pure birth process

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