

## On Some Models of Degradation

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First we consider a degradation model governed by the geometric-type process and prove that the expectation of the number of arrivals in this models is infinite for all  $t > 0$ . We generalize this model to the case when, similar to the Brown-Proschan model each arrival with probability  $p$  is followed by the next cycle of the corresponding geometric process and with probability  $1-p$  results in the first cycle (which is equivalent to an overhaul in repairable systems). We also consider relevant results for the 'extreme' and 'cumulated' shock models of degradation. In the extreme shock model only the impact of the current, possibly fatal shock is usually taken into account, whereas in cumulative shock models, the impact of the preceding shocks is accumulated as well. In this paper, we combine an extreme shock model with a specific cumulative shock model. It is shown that the proposed setting can also be interpreted as a generalization of the Brown-Proschan model that describes repair actions for repairable systems. For a system subject to a specific process of shocks, we derive the survival probability and the corresponding failure rate function. Some meaningful interpretations and examples are discussed.