

# Discrete time series-parallel systems

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## Abstract

The talk will be concerned with reliability properties of series-parallel systems when the component lifetimes are independent and have discrete failure time distributions. Under the assumption that each subsystem have identical components while different subsystems may have different types of components, we will present in particular exact distributions of the number of failed components at the time when the system fails. For the special case when the components have phase-type failure time distributions, matrix-based expressions will be given for the quantities under concern. The results will be used to obtain optimal configuration of the series-parallel system which is replaced at failure.

## Keywords

Discrete lifetime distribution, Phase-type distribution, Series-parallel system, Reliability theory

## References

- [1] Dembińska, A. and Eryilmaz S. (2021). Discrete time series-parallel system and its optimal configuration. *Reliability Engineering & System Safety* 215, 107832, DOI 10.1016/j.ress.2021.107832