

RELIABILITY OF THE NETWORKS WITH RANDOM NUMBER OF THE UNITS IN EACH SUBNET

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Our work focuses on the reliability of networks for the serial-parallel type versus the parallel-serial type when the number of units in each subnet is a Power series distributed (PSD) random variable and the lifetimes of the units are independent, identically distributed random variables (i.i.d.r.v.). General formulas for calculating the survival/reliability functions of such networks were obtained. This formulas shows that solving the problem of identifying the best network in terms of its reliability does not matter the lifetime c.d.f. $F(x)$ of each units in each subnetwork, the answer depending only of the number M and the probability distribution of the number of units in each of M subnetworks.

Sufficient conditions have been formulated for the serial-parallel network to always be more reliable than the parallel-serial network. Some examples have been illustrated graphically.