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Some Inequalities and Bounds for Weighted Reliability Measures

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Abstract: Weighted distributions occur naturally in a wide variety of settings with applications in reliability, forestry, ecology, bio-medicine, and many other areas. In this note, bounds and stability results on the distance between weighted reliability functions, residual life distributions, equilibrum distributions with monotone weight functions and the exponential counterpart in the class of distribution functions with increasing or decreasing hazard rate and mean residual life functions are established. The problem of selection of experiments from the weighted distributions as opposed to the original distributions is addressed. The reliability inequalities are applied to repairable systems.

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