

ON THE MONOTONICITY OF TAIL PROBABILITIES*

BY

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Abstract. Let S and X be independent random variables, assuming values in the set of non-negative integers, and suppose further that both $\mathbb{E}(S)$ and $\mathbb{E}(X)$ are integers satisfying $\mathbb{E}(S) \geq \mathbb{E}(X)$. We establish a sufficient condition for the tail probability $\mathbb{P}(S \geq \mathbb{E}(S))$ to be larger than the tail $\mathbb{P}(S + X \geq \mathbb{E}(S + X))$, when the mean of S is equal to the mode.

2020 Mathematics Subject Classification: Primary 60G50; Secondary 60E15.

Key words and phrases: tail comparisons, sums of independent random variables, (negative) binomial distribution, Poisson distribution, Simmons' inequality.

THE FULL TEXT IS AVAILABLE HERE

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