

# On the Absorption Probabilities and Absorption Times of Finite Homogeneous Birth-Death Processes

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## **Abstract**

This paper provides some formulas for the absorption probabilities, the mean absorption times and the variances of first absorption times in finite homogeneous absorbing birth-death processes. The results are then applied to a genetic model of Moran [1958] for computing the absorption probability densities, the mean absorption times and the variances of first absorption times. Specifically, it is shown that the probability distribution of the first absorption time is the matrix analog of exponential distribution or a mixture of exponential distributions if the transition matrix is diagonalizable.