A GLOBAL APPROACH TO FIRST PASSAGE TIMES

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Abstract: First passage times for discrete-time stochastic processes are studied from a global point of view, in terms of a mapping that takes a numerical sequence to its first passage time function. The continuity properties of this mapping with respect to Skorohod’s $J_1$ and $M_1$ topologies are examined. One typically has continuity in $M_1$, but in $J_1$ only under extra assumptions. The results are applied to random walks and renewal theory.

1991 AMS Mathematics Subject Classification: Primary: -; Secondary: -;
Key words and phrases: -

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