

OSCILLATING RANDOM WALKS WITH TWO LEVELS OF SWITCHING

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We consider a Markov random walk X_n , $n \geq 0$, generated by the sums of independent random variables. Each successive jump of the random walk is distributed in accord with one of three laws in dependence on the location of a walking particle: within some interval $[a, b]$, to the left of the point a , or to the right of the point b . Using factorization methods, we obtain some representations for the double Laplace–Stieltjes transforms (in time and spatial variables) of the distribution of X_n and find the transforms of the stationary distribution of a chain.

Key words and phrases: oscillating random walk, stationary distribution, factorization identities.

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