

RANDOM WALKS ON THE NONNEGATIVE INTEGERS WITH A
LEFT-BOUNDED GENERATOR

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Abstract: This paper studies the random walks $S_0 + \sum X_i$ on the nonnegative integers, where the X_i 's are independent identically distributed random variables with generating function of type $\Phi(z) = \sum_{i \geq -s} c_i z^i$, s a positive integer, with a convergence radius greater than 1. We infer from a link between the number of zeros of $z \mapsto 1 - \Phi(z)$ inside the unit disc and $\inf X_i$ a factorisation of the symbol $f(\theta) = 1 - \Phi(e^{i\theta})$ which allows a geometrical computation of the potentials associated with these random walks. Examples illustrate this theory.

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