Quantitative
Modeling
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Systems

# On a Class of Two-Dimensional Nearest Neighbouring Random Walks

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**Abstract** For positive recurrent nearest-neighbouring semi-homogeneous random walks on the lattice $\{0, 1, 2, \dots, \} \times \{0, 1, 2, \dots, \}$ the bivariate generating function of the stationary distribution is analyzed for the case where one-step transitions to the North, North-East and East at interior points of the state space all have zero probability. It is shown that this generating function can be represented by meromorphic functions. The construction of this representation is exposed for a variety of one-step transition vectors at the boundary points of the state space.

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