

# **TAIL ASYMPTOTICS OF THE STATIONARY DISTRIBUTION OF A TWO DIMENSIONAL REFLECTING RANDOM WALK WITH UNBOUNDED UPWARD JUMPS**

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We consider a two dimensional reflecting random walk on the nonnegative integer quadrant. This random walk is assumed to be skip free in the direction to the boundary of the quadrant, but may have unbounded jumps in the opposite direction, which are referred to as upward jumps. We are interested in the tail asymptotic behavior of its stationary distribution, provided it exists. Assuming the upward jump size distributions have light tails, we completely find the rough tail asymptotics of the marginal stationary distributions in all directions. This generalizes the corresponding results for the skip free reflecting random walk. We exemplify these results for a two node network with exogenous batch arrivals.