

# Non-local Correlation Functions in the Spanning Tree Model near the Boundary

Khaydar Nurligareev

Consider a square lattice in the half-plane with the absorbing or reflecting boundary conditions. Fix two segments  $I_k$  and  $J_k$  of length  $k$  near the boundary and consider so called  $k$ -leg watermelon, that is a configuration consisting of  $k$  non-intersecting paths linked  $I_k$  to  $J_k$ . What is the ratio of the number of watermelon configurations to the total number of spanning trees? It turns out that if the distance  $r$  between  $I_k$  to  $J_k$  is large, then the ratio behaves as  $r^{-k(k+1)}$  for absorbing boundary conditions and  $r^{-k(k-1)} \ln(r)$  for reflecting boundary conditions respectively. Moreover, it is possible to obtain the leading coefficients.