

**Optimal strategy for avoiding capture in a multiple
stage random walk on a cycle**

Grzegorz Kubicki

University of Louisville, USA, and University of Opole, Poland

gkubicki@louisville.edu

Ewa Kubicka

University of Louisville

ewa@louisville.edu

Magorzata Kuchta

Wroclaw University of Technology

malgorzata.kuchta@pwr.wroc.pl

Michal Morayne

Wroclaw University of Technology

michal.morayne@pwr.wroc.pl

We want to maximize the number of moves for a random walk on an even cycle before visiting the vertex opposite to the starting position. Our payoff is the number of moves but it is reduced to 0 if we are not able to avoid the opposite vertex. Optimal stopping time and the expected value of the payoff are determined for this random process as well as for the corresponding multistage process with N stages. Asymptotic behavior of the expected payoff is determined as N increases without bound.