"Modeling Random Walk in a Constrained Environment"

Mariam Aslamazishvili

Supervisor: Oleg Kharshiladze

Email: mariam.aslamazishvili722@ens.tsu.edu.ge

Department of Physics, Faculty of Exact and Natural Sciences,

Ivane Javakhishvili Tbilisi State University

I. Chavchavadze Avenue 3, Tbilisi, 0179, Georgia

The report discusses the method of restricted random walk, where the particle's path includes free nodes and trapping nodes. Modeling such a problem is possible using statistical methods and represents a complex problem.

Specifically, in our case, one-dimensional and two-dimensional models are discussed. The dependence of the lifetime of a confined particle on the initial coordinate and the distance between traps has been studied. Similarly, the problem is examined in two-dimensional space.

Dependancy graphs have been obtained, which are parabolic in the first case. In the second case, the two-dimensional model shows a Gaussian distribution, indicating a more complex nature of the dynamics.

References

- [1] Gould H., Tobochnik J. - Computer Simulations in Physics. Part 2 – 1990
- [2] *მ.მირიანაშვილი ზოგადი ფიზიკის კურსი: მოლეკულურივ ფიზიკა: ნაწილი II*
- [3] *სამაგისტრო ნაშრომი, "ბრაუნის მოძრაობის მოდელირება", მარიამ-ელიზაბეტ გომიაშვილი*
- [4] Pearson, Karl (1905) "The Problem of the Random Walk"