

Observation of Atmospheric Muons and Measurement of their Lifetime

Dolev Einav and Or Harpazi

Abstract—The process of detecting atmospheric muons and measuring their decay time, as observed inside a plastic scintillator, is presented. Atmospheric muons, produced by the decay of charged pions, decay inside a plastic scintillator according to the $\mu^- \rightarrow \nu_\mu + e^- + \bar{\nu}_e$ channel, as well as its charge conjugate; the resulting electron is detected following the initial detection of the passing muon, processing the two timestamps into measurements of the muon lifetime. A lifetime of $\tau = 2.062 \pm 0.050$ [μs] was measured and analysed.

I. INTRODUCTION

lorem ipsum dolor sit amet.[1]

APPENDIX

A. MONTE-CARLO SIMULATION

a) bla bla bla:

REFERENCES

- [1] sample author et al. “Review of particle physics”. In: *Phys. Rev. D* 110.3 (2024), p. 030001. DOI: 10.1103/PhysRevD.110.030001.

¹Raymond & Beverly Sackler Faculty of Exact Sciences, Tel Aviv University, Israel