The Lifetime of the Muon

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Insert abstract here.

I. OBJECTIVE

To determine the lifetime of the muon.

II. INTRODUCTION

The muon was first discovered in 1936 by Carl D. Anderson and Seth Neddermeyer. They were studying cosmic radiation when Anderson noticed that certain particles curved differently from the known particles passing through a magnetic field. The negatively charged particles curved less sharply than electrons and more sharply than protons, but all carried the same velocity through the magnetic field. Originally, the charge of this particle was assumed to be of the same negative magnitude as electrons, and thus the difference in curvature was explained by giving this particle a mass greater than an electron and less than a proton. This particle was originally called a "mesotron", the "meso" prefix meaning "middle", as in having a mass between that of an electron or proton. Later in 1947, a particle with similar mass but dissimilar force properties was discovered. These two particles were grouped together as "mesons" instead of mesotrons (still meaning they have an intermediate mass to electrons and protons).

III. APPARATUS AND METHODS

IV. DATA ANALYSIS

V. CONCLUSION

[1]Tipler and Llewellyn, *Modern Physics* (Worth Publishers, 1978).
[2]Taylor, *An Introduction to Error Analysis: The Study of Uncertainties in Physical Measurements, 2nd Ed.* (University Science Books, 1996).
[3]*The Lifetime of the Muon*, Occidental College Physics Department (2018).
[4]*Model 77 Series IV Digital Multimeter Users Manual*, Fluke Corporation (2006).