Thesis Title
Second Line if Necessary

by

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Abstract

This is my abstract.

Acknowledgments

Blah blah blah.

Statement of Originality

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Introduction

The cosmic sky has entranced humans for as far as recorded history can trace. As technology evolved, so too did the observation of the universe around us; from the naked eye to primitive telescopes, and eventually to present day space telescopes, like the Hubble Space Telescope and the upcoming James Web Space Telescope **(NEED TO CITE THESE)**. These growing technological leaps have also resulted in the exploration of the incredibly small and eventually resulted in the discovery of the neutrino [4]. It was perhaps inevitable that these two seemingly separate areas of physics would eventually meet.

1.1 Neutrinos

The neutrino is a fundemental particle first proposed by Wolfgang Pauli [1], and then later discovered in 1956 using the byproducts of β^- decay [4]. As research continued into the elusive neutrino, another flavour of neutrino was discovered in 1962 called the muon neutrino (ν_μ) [2] and eventually the final flavour of the tau neutrino (ν_τ) [3].

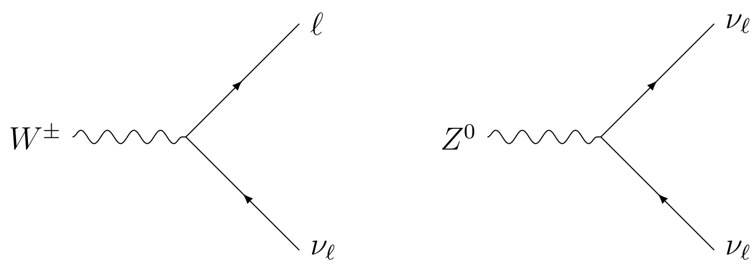

Figure 1.1: The Feynmann diagrams for the vertices that would be included in neutrino interactions using the charged $W^{\pm}$ boson on the left and the neutral Z^0 boson on the right.

1.1.1 Interactions

Neutrinos are neutral and interact only through the Weak interaction. The Weak interaction is a force that is mediated by the $W^{\pm}$ and Z^0 massive bosons, and is the force responsible for decays. The main vertices involved in neutrino interactions are shown in Figure [**?**], where we see the lepton

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6.1 Summary

6.2 Future Work

6.3 Conclusion

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