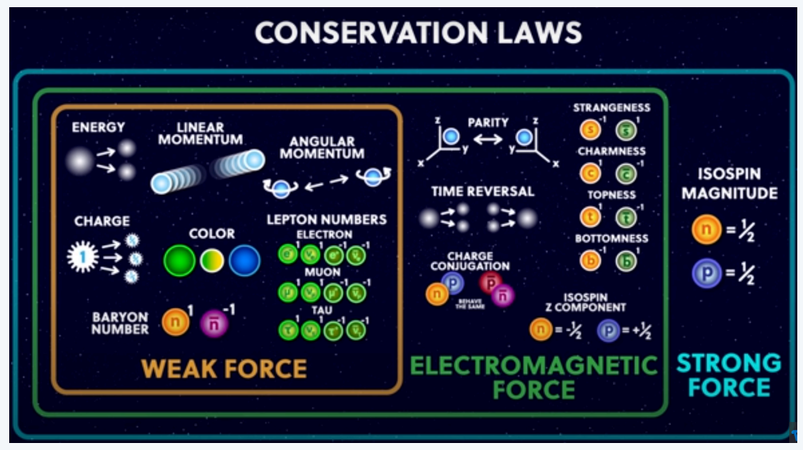
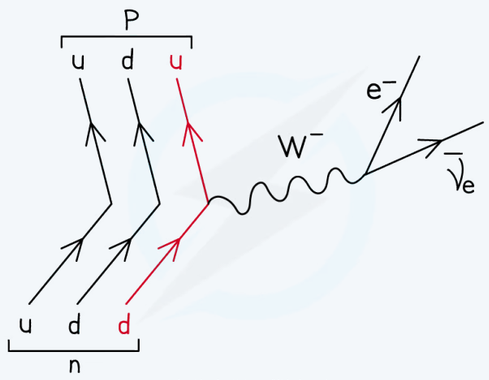
EXPERIENTIAL LEARNING

QUANTUM MECHANICS

INTRODUCTION

Feynman Diagram is a 2-D pictorial representation of interaction of subatomic particles. Introduced during the development of quantum electrodynamic theory. These diagrams are one of the fundamental tools used to make precise calculations for the probability of occurrence of any process by physicists. Hence, knowledge of the Feynman diagram becomes imperative in understanding the world of quantum mechanics





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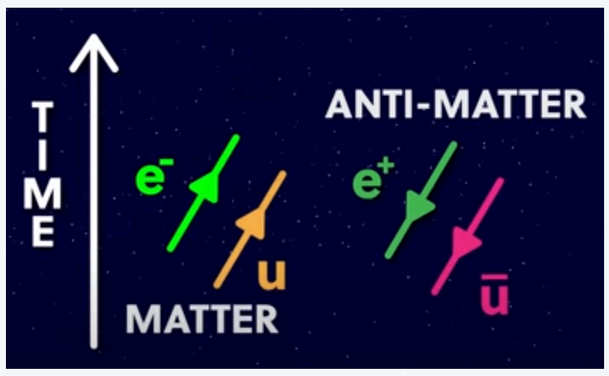
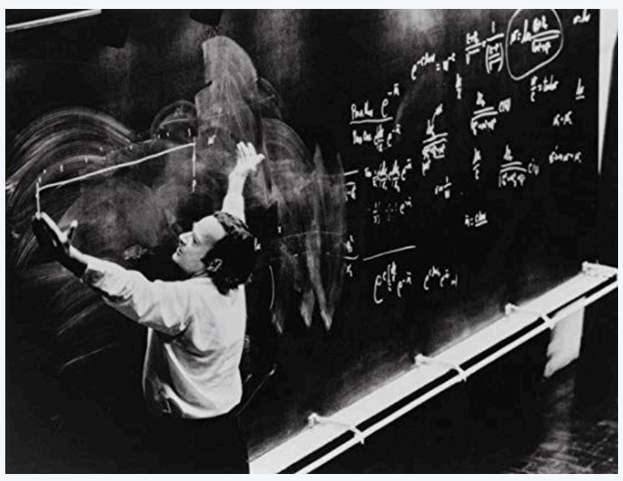
PROBLEM DEFINITION

Providing user-friendly interface for checking validity of drawn Feynman's diagram and obtaining equation for scattering amplitude

OBJECTIVES

- Developing an interface for drawing Feynman's Diagram
- Checking the correctness of Feynman's Diagram
- Encouraging curiosity and a deep understanding of quantum mechanics through interactive interface.
- Understanding the mathematical aspect of Feynman's Diagram and arriving at the equation for scattering amplitude





METHODOLOGY

- Understanding Feynman's diagrams
- Identifying parameters to be checked
- Choosing suitable framework to develop the application
- Creating a user-friendly interface to draw the diagrams
- Using the identified parameters to check the diagram
- Arriving at the equation for scattering amplitude

TOOLS USED

- Pygame was chosen to build the interface considering the features available in the package.
- Pygame is a popular Python library used for creating games and multimedia applications. It provides functionalities for handling graphics, sound, input devices like keyboards and mice, and other multimedia tasks.

TEAM MEMBERS

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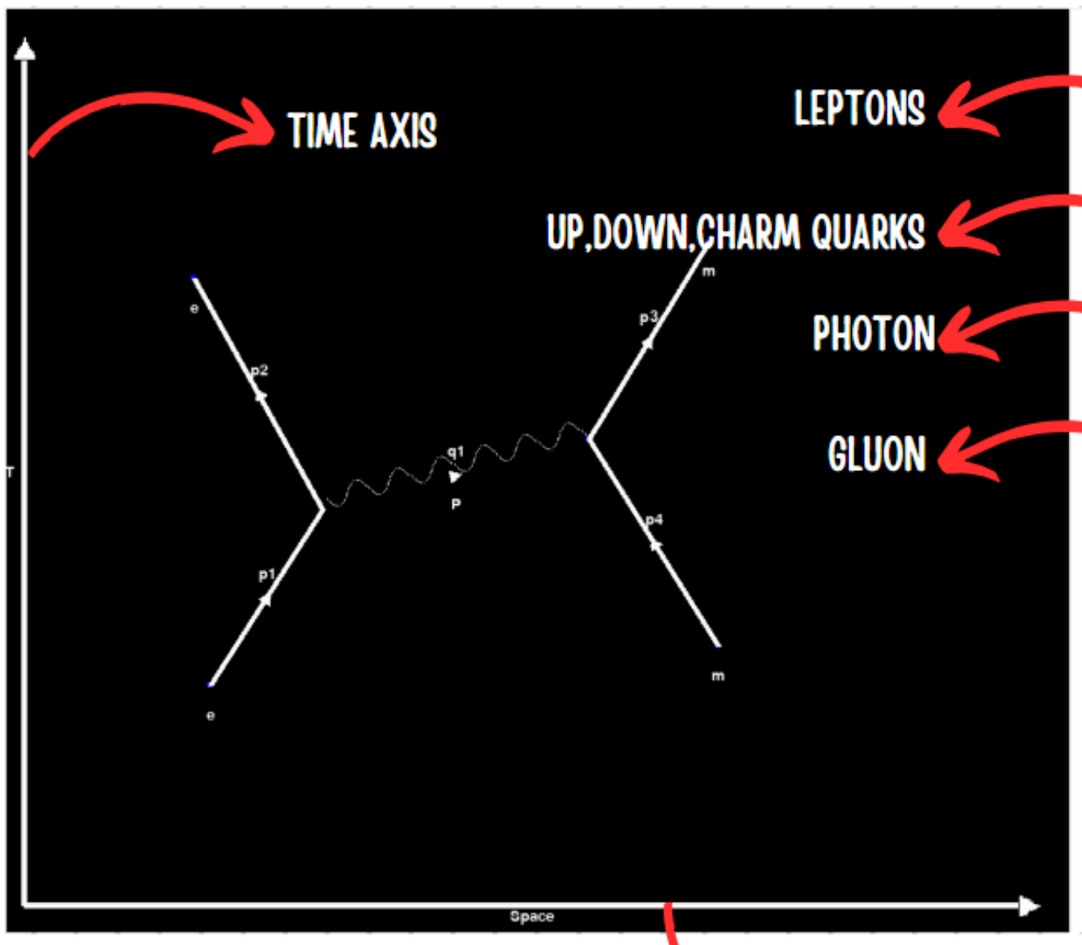
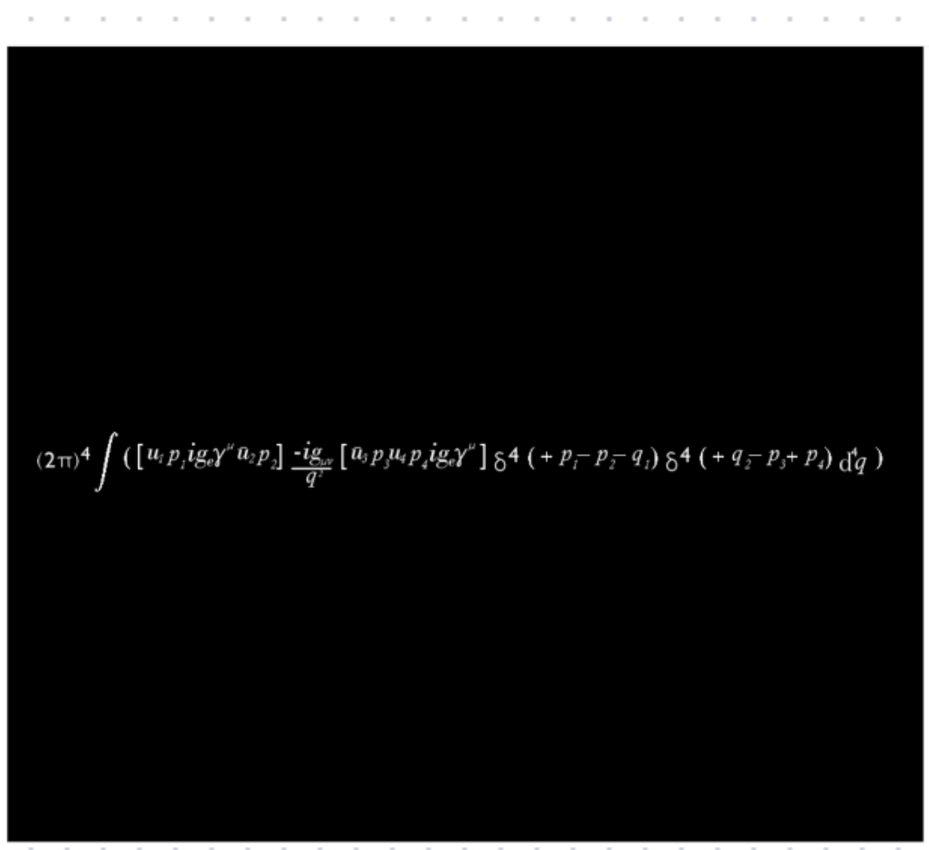
RESULT AND DISCUSSION

FEATURES





EQUATION WINDOW

SYSTEM IDENTIFIES
THE KIND OF INTERACTION

CONCLUSION

The interface serves as a tool for drawing and understanding the Feynman diagrams. along with the interactions between particles. The tedious task of converting the diagrams to equations is reduced to a single click, thus saving precious time. Further, equation obtained at a click of a button introduces user to the mathematical aspects of the diagram and its relevance in the world of particle physics. It instills curiosity among physics enthusiasts.