Project Proposal

Project Name: Visualization of Nuclear Orbitals

PROJECT DESCRIPTION (< 150 words)

I will be assisting my PhD colleague with his nuclear physics research by creating animated visualizations depicting the movement of nucleons within various particles such as deuterons, tritons, and alpha particles, through the use of Python. The data required for these animations will be provided by my colleague.

SOLUTION (Deliverables). Write a bullet point list of what you expect your software will achieve. I do not hold you to this list for your end-product.

- Creation of animation videos illustrating the behavior of deuterons, tritons, and alpha particles. Example: A Better Way To Picture Atoms

DATASETS (if any used).

- Precise information about nucleons positions and movements (Provided by my colleague)

Expected Tools (Cloud DBs, Hardware, & Python Libraries to be used.

- Manim library
- NumPy
- SciPy

Rough Timeline (Fill in the columns):

Weeks	**Project Task Timeline**
10/14/2023	Acquire and set up Manim, establish GitHub repository, and familiarize myself with the library
10/28/2023	Develop an initial animation for a simple case to set the foundation for particle animations (e.g., 2-particle rotation).
11/4/2023	Animate deuteron particles, understanding and implementing distinct codes for each particle's specialized behavior.
11/11/2023	Progress to animating triton particles, ensuring tailored code for each particle's unique characteristics.
11/18/2023	Proceed to animate alpha particles, utilizing specialized codes for their specific behavior.
12/1/2023	Finalize project and meet the deliverable deadline