# My Regeneron STS Experience

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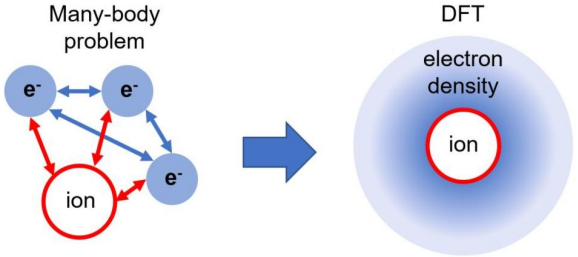
# What is Regeneron STS?

- Nation's oldest and most prestigious science and mathematics competition for high school seniors
- 40 Finalists are selected from 2,500 applicants
- Winners are chosen at finalist week in Washington DC
- Placed 9th

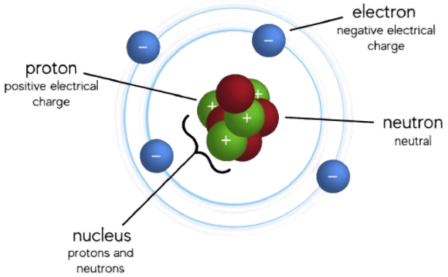
# My Research

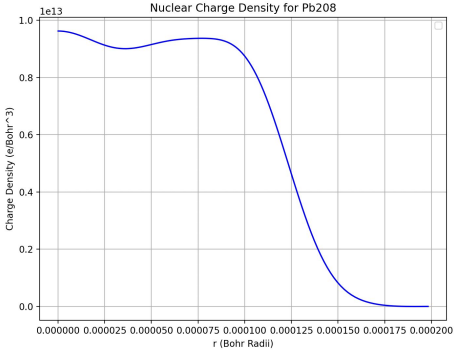
- Developed materials simulation code to more accurately simulate quantum mechanical electron behavior near the nucleus
- Derived corrections to electron energy and coupling constants

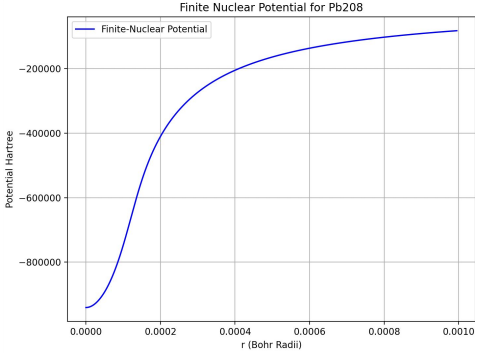


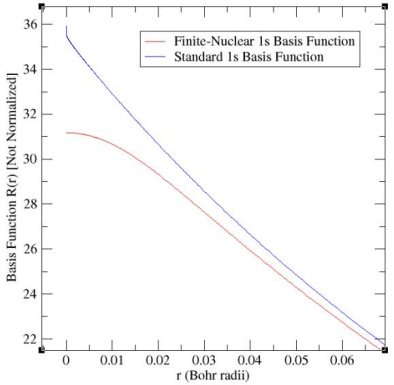

$$\left[-\frac{1}{2}\frac{\mathrm{d}^2}{\mathrm{d}r^2}+\frac{l(l+1)}{r^2}+v_i(r)\right]u_i(r)=\epsilon_i u_i(r)$$

$$\left(\mathbf{p}\cdot\frac{c^2}{2c^2-v_i}\cdot\mathbf{p}+v_i\right)u_i=\epsilon u_i$$



# How I Got Into Research

- Self-studied physics starting summer before 9th grade
- Learned quantum mechanics in 10th grade
- Reached out to a professor at Duke

# Future For Research

- Classes at Enloe were instrumental to me doing well—Calculus 3/Differential Equations, AP Chemistry, etc.
- Opportunities like NC State Dual Enrollment
- Anyone can do research—I was lucky to have the knowledge and opportunity, but accessibility is key
- Focusing on quality of STEM education, encouraging independent exploration, encouraging teacher support, and creating research programs will lead to more students being able to do research like I could.