

Honors Research Project Proposal

Jonathan Samudio

- **Major:** Physics
- **Minor:** Mathematics

- **Hometown:** Fort Worth, Texas

- **Activities:**
 - Society of Physics Students
 - Rock climbing
 - Drumming
- **Career Goal:** Pursuing a PhD in Particle Physics

Project title: Low-Cost Gamma Ray Spectrometry

Supervising faculty member: Dr. Wayne Keith

Project Abstract:

Typical gamma ray spectrometry is done using professional grade equipment with expensive scintillation detectors. This project aims to construct a much lower cost detector, which will provide a gamma spectrum, which generally matches the accepted spectrum energies for a specific radionuclide. A custom high voltage power supply will be constructed to drive a photomultiplier tube with an attached thallium-doped sodium iodide crystal. This detector will then be wired with an Arduino microcontroller for which a program will be written to interpret the readings of the detector. The spectrum results will then be compared to theoretical values and values obtained on professional equipment within the Physics department.

