Introduction - First draft

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Investigating nuclear transitions, specifically the emission of highly energetic gamma rays, provides valuable insights into the composition and behavior of radioactive elements. The discovery of radioactivity by Becquerel in the late 19th century marked a significant milestone in the understanding of atomic and nuclear phenomena[1]. The unique energy spectra of gamma rays emitted during nuclear transitions are fascinating and have critical implications for various technological applications, such as radiation therapy in cancer treatment and nuclear energy production.

Radioactive elements, such as Cobalt-60, undergo a series of decay processes, including beta decay and subsequent gamma emissions. Cobalt-60 decays into Nickel-60 and emits gamma rays with specific energies. Thanks to the invention of Geiger counter[2], the emitted energies can be measured by counting. This study will primarily concentrate on the relationship between the counts of the Geiger counter and the density thickness of the absorbers.

Here I report an improved approach of known method [3] to measuring the wavelength of gamma rays emitted by Cobalt-60 using a Geiger counter with absorbers. This approach yielded a value of (*blank*) m. The precision of this measurement was limited by the uncertainty of the counts counted by the Geiger Counter.

[1] H. Becquerel, "Sur les radiations émises par phosphorescence", *C. r. hebd. séances Acad. sci.* **122**, 420-421 (1896).
[2] H. Geiger & W. Müller, "Elektronenzählrohr zur Messung schwächster Aktivitäten", *Sci. Nat.* **16**, 617 (1928).
[3] D. Fygenson, "Gamma Ray Absorption" *Physics 25 Lab Manual*,15-25(2021).