**\subsection{Error Analysis}**

Experimental results are often expressed as $\bar{x} \pm \sigma\_{\bar{x}}$, where $\bar{x}$ is the measurement and $\sigma\_{\bar{x}}$ is the error. The error propagation for a function $f$ with an associated uncertainty is expressed as $\sigma\_f=|\frac{\partial f}{\partial x}\sigma x|$. In the case that our function $f$ is dependent on multiple variables, the error propagation equation goes as follows:

\begin{equation}

\sigma\_a(x,y,z...)^{2}=(\frac{\partial f}{\partial x}^{2}\sigma\_x^{2})+(\frac{\partial f}{\partial y}^{2}\sigma\_y^{2})+(\frac{\partial f}{\partial z}^{2}\sigma\_z^{2})+...

\end{equation}

When doing the calculations for the lead thickness, the corresponding errors associated to each observable was noted. Using the density of lead, which is $$11.32\frac{g}{cm^{3}}$, and the