

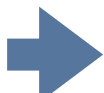


Student Report: TOTEM Data Express

What is the key physics idea behind this investigation?

Please attach any plots from your experiment and calculations made, with explanations.

Key Result:		Evaluate the accuracy of your data.
Question to consider: What is the diameter you calculated for proton elastic scattering from TOTEM data?		
Sources of Uncertainty in Measurement:		Estimate the uncertainty in measurement and discuss what might cause it.
Questions to consider: Why and to what extent can we trust your results? Consider the precision of measurements of scattering angles, the consistency of data, and the amount of data available.		
Reasoning:		Give 2-3 pieces of evidence (data, observations, calculations) that support your answer.
Questions to consider: Which important wave-like behavior do protons display in your TOTEM investigation? How can this wave-like property of particles help us determine a particle-like property (size of the proton)?		

Implications:

Questions to consider: How might this method work for determining the size of other particles? Might all moving objects have wave-like properties? (Hint: For larger particles, what might be the relative wavelength?) How could you use this evidence to convince someone that a particle can also have wave-like characteristics?



Use scientific principles to explain *why* you got these data. Use and explain relevant scientific terms. What is the value of what you learned?