PHYS 500-FALL 2019
Homework 4
(24 marks)
Hand in: Saturday 30ᵗʰ November at 23:59

1. In an experiment to measure the volume of a cube of side *a* we got the following recordings:

Recordings	Length of side *a* in cm (±0.3 cm)
1	8.2
2	5.3
3	7.9
4	8.1
5	8.2
6	7.8

A) The second measurement looks very odd compared with the others. Apply Chauvenet's Criterion to check if we should keep it or reject it.

After completing the first step we follow two different methods to find the volume of the cube:

B) (i) Find the average side length and its error.

(ii) Find the volume of the cube and its error using as a length for the side *a* the value you found in the previous question B(i).

(iii) Find the relative error for the volume.

C) (i) For each recorded value for the side length given in the table find the volume of the cube. Find the error in each recording and round properly your results.

(ii) Find the average value of the volumes you found in the previous question C(i) and its error.

(iii) Find the relative error for the volume average value you found in the previous question C(ii)

D) In steps B) and C) we show two different methods for measuring the same thing. What is the value of the volume of the cube and its final error?