

## The Analysis of Uncertainty in a Single Sample Experiments

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Three Decade ago, it was not acceptable for experimental research work to be published without containing some thought of description and analysis of the uncertainty included in the results. This paper examines the relevance of errors or in another word the errors causing the uncertainty in experimental research work and discusses some basic theory necessary for an understanding of the estimation of uncertainty in a single sample experiments. Care is taken to distinguish between the different sources of inaccuracy with the emphasis throughout this work being on both physical understanding and on analytical analysis. With a little practice, an assessment of the errors in any experiment should become a routine. The analysis should then be applied as a matter of course during the design of the experiments. Of course, this analysis is important in deciding to how good is the experimental results and the reliability to be used and to be compared with the obtained results of another published results.

The present paper presents a general analysis of types of errors in an engineering experimental results. It distinguishes between uncertainty and the errors. The mathematical methods used to analysis of expected sources of errors in a single sample if experiments usually used in fluid mechanics, heat transfers, bio-chemistry, chemical reactions...etc., are given in simple way. However, the procedure used in the present analysis still be applied to both single and multi- sample engineering measurements.

### **Biography:**

Maher Gamil Ahmed Fathy Higazy, Professor of Mechanical Engineering, Benha University, Egypt. Now he is the Dean of Al Salam Higher Institute of Engineering and Technology, Cairo, Egypt.