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Uncertainty Calculations in the First Introductory Physics Laboratory SHAFIQUR RAHMAN, Allegheny College — Uncertainty in a measured quantity is an integral part of reporting any experimental data. Consequently, Introductory Physics laboratories at many institutions require that students report the values of the quantities being measured as well as their uncertainties. Unfortunately, given that there are three main ways of calculating uncertainty, each suitable for particular situations (which is usually not explained in the lab manual), this is also an area that students feel highly confused about. It frequently generates large number of complaints in the end-of-the semester course evaluations. Students at some institutions are not asked to calculate uncertainty at all, which gives them a fall sense of the nature of experimental data. Taking advantage of the increased sophistication in the use of computers and spreadsheets that students are coming to college with, we have completely restructured our first Introductory Physics Lab to address this problem. Always in the context of a typical lab, we now systematically and sequentially introduce the various ways of calculating uncertainty including a theoretical understanding as opposed to a cookbook approach, all within the context of six three-hour labs. Complaints about the lab in student evaluations have dropped by 80%. * supported by a grant from A. V. Davis Foundation

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