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Teaching data analysis in the Undergraduate Physics Laboratory

Wednesday 31 May 2017 16:30 (15 minutes)

The talk is devoted to one of the most challenging parts of the physics laboratory curriculum: data analysis and uncertainty calculation. We expect students to know a lot about their experiment data analysis starting their first lab session in their 1st-year physics course, while the students have zero background in this area. Recommended readings are very little helpful. Instead of evaluating very poor results of students' self-preparation, it seems reasonable to include teaching elements of data analysis into teaching the experiment methods in the labs regardless the labs format. Report is based on the 8-year experience in teaching data analysis for the 1st and the 2nd year Engineering Science students and more than 10 years teaching Physics Majors and Engineering Science students in Advanced Physics Laboratory (3rd and 4th year of undergraduate physics course). For juniors, the technique utilizes analysis of the currently run laboratory experiments to explain general concepts of measurements and calculating uncertainties along with their application to specific data and data collection method.

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