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| | Autore | Christodoulides Costas |
| | Titolo | Analysis and Presentation of Experimental Results : With Examples, Problems and Programs  / / by Costas Christodoulides, George Christodoulides |
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| | Descrizione fisica | 1 online resource (XIV, 526 p. 119 illus.) |
| | Collana | Undergraduate Lecture Notes in Physics, , 2192-4791 |
| | Disciplina | 530.8 |
| | Soggetti | Physical measurements Measurement Chemistry Engineering Measurement Science and Instrumentation Chemistry/Food Science, general Engineering, general |
| | Lingua di pubblicazione | Inglese |
| | Formato | Materiale a stampa |
| | Livello bibliografico | Monografia |
| | Nota di contenuto | Basic statistical concepts -- Measurement errors -- A though experiment -- The statistical analysis of experimental results -- The presentation of numerical results -- The propagation of errors -- The three basic probability distributions -- The statistics of radioactivity -- Elements from the theory of errors -- Comparison and rejection of measurements -- The method of least squares -- Graphs -- The written report of the results of an experiment -- Appendix 1. Least squares straight line y = +  x . The errors in  and  -- Appendix 2. Dimensional analysis -- Appendix 3. The use of random numbers in finding values of a variable x which are distributed according to a given probability density function f(x) -- Appendix 4. Values of fundamental physical constants -- Answers to the problems -- List of programs and code samples -- Index. |
| | Sommario/riassunto | This book is intended as a guide to the analysis and presentation of experimental results. It develops various techniques for the numerical |

processing of experimental data, using basic statistical methods and the theory of errors. After presenting basic theoretical concepts, the book describes the methods by which the results can be presented, both numerically and graphically. The book is divided into three parts, of roughly equal length, addressing the theory, the analysis of data, and the presentation of results. Examples are given and problems are solved using the Excel, Origin, Python and R software packages. In addition, programs in all four languages are made available to readers, allowing them to use them in analyzing and presenting the results of their own experiments. Subjects are treated at a level appropriate for undergraduate students in the natural sciences, but this book should also appeal to anyone whose work involves dealing with experimental results.