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| Autore | Rabinovich Semyon G |
| Titolo | Evaluating Measurement Accuracy : A Practical Approach / / by Semyon G. Rabinovich |
| Pubbl/distr/stampa | Cham : , : Springer International Publishing : , : Imprint : Springer, , 2017 |
| ISBN | 3-319-60125-3 |
| Edizione | [3rd ed. 2017.] |
| Descrizione fisica | 1 online resource (XVI, 324 p. 19 illus.) |
| Collana | Springer Series in Measurement Science and Technology, , 2198-7807 |
| Disciplina | 530.8 |
| Soggetti | Physical measurements<br>Measurement<br>Materials science<br>Quality control<br>Reliability<br>Industrial safety<br>Measurement Science and Instrumentation<br>Characterization and Evaluation of Materials<br>Quality Control, Reliability, Safety and Risk |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | Preface -- Abbreviations -- 1 General Concepts in the Theory of Measurements -- 2 Measuring Instruments and Their Properties -- 3 Statistical Methods for Experimental Data Processing -- 4 Direct Measurements -- 5 Indirect Multiple Measurements -- 6 Combined and Simultaneous Measurements -- 7 Combining the Results of Measurements -- 8 Examples of Measurements and Measurement Data Processing -- 9 The International Vocabulary of Metrology and the Guide to the Expression of Uncertainty in Measurement: Analysis, Criticism, and Recommendations -- 10 Step-by-Step Guide to the Evaluating of Measurement Accuracy -- 11 Conclusion -- Appendix -- Glossary -- References -- Index. |
| Sommario/riassunto | This book presents a systematic and comprehensive exposition of the theory of measurement accuracy and provides solutions that fill significant and long-standing gaps in the classical theory. It eliminates |

the shortcomings of the classical theory by including methods for estimating accuracy of single measurements, the most common type of measurement. The book also develops methods of reduction and enumeration for indirect measurements, which do not require Taylor series and produce a precise solution to this problem. It produces grounded methods and recommendations for summation of errors. The monograph also analyzes and critiques two foundation metrological documents, the International Vocabulary of Metrology (VIM) and the Guide to the Expression of Uncertainty in Measurement (GUM), and discusses directions for their revision. This new edition adds a step-by-step guide on how to evaluate measurement accuracy and recommendations on how to calculate systematic error of multiple measurements. There is also an extended section on the method of reduction, which provides an alternative to the least-square method and the method of enumeration. Many sections are also rewritten to improve the structure and usability of the material. The 3rd edition reflects the latest developments in metrology and offers new results, and it is designed to be accessible to readers at various levels and positions, including scientists, engineers, and undergraduate and graduate students. By presenting material from a practical perspective and offering solutions and recommendations for problems that arise in conducting real-life measurements, author Semyon Rabinovich offers an invaluable resource for scientists in any field.