

Springer Series in Measurement Science and Technology

Semyon G. Rabinovich

# Evaluating Measurement Accuracy

A Practical Approach

*Third Edition*

 Springer

# Evaluating Measurement Accuracy A Practical Approach

**Gary Hunter, Kim Lowell**



## **Evaluating Measurement Accuracy A Practical Approach:**

**Evaluating Measurement Accuracy** Semyon G. Rabinovich, 2017-09-05 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

**Evaluating Measurement Accuracy** Semyon G. Rabinovich, 2009-12-11 Evaluating Measurement Accuracy is intended for anyone who is concerned with measurements in any field of science or technology It reflects the latest developments in metrology and offers new results but is designed to be accessible to readers at different levels meteorologists engineers and experimental scientists who use measurements as tools in their professions graduate and undergraduate students in the natural sciences and engineering and technicians performing complex measurements in industry quality control and trade The material of the book is presented from the practical perspective and offers solutions and recommendations for problems that arise in conducting real life measurements This inclusion is a notable and unique aspect of this title as complex measurements done in industry and trade are often neglected in metrological literature leaving the practitioners of these measurements to devise their own ad hoc techniques

Evaluating Measurement Accuracy S. G. Rabinovich, 2010 The goal of Evaluating Measurement Accuracy A Practical Approach is to present methods for estimating the accuracy of measurements performed in industry trade and scientific research Although multiple measurements are the focus of current theory single measurements are the ones most commonly used This book answers fundamental questions not addressed by present theory such as how to discover the complete uncertainty of a measurement result In developing a general theory of processing experimental data this book for the first time presents the postulates of the theory of measurements It introduces

several new terms and definitions about the relationship between the accuracy of measuring instruments and measurements utilizing these instruments. It also offers well grounded and practical methods for combining the components of measurement inaccuracy. From developing the theory of indirect measurements to proposing new methods of reduction in place of the traditional ones, this work encompasses the full range of measurement data processing. It includes many solid examples that exemplify typical problems encountered in measurement practice from general theory to practical applications. As a result, *Evaluating Measurement Accuracy* serves as an inclusive reference work for data processing of all types of measurements, single and multiple dependent and independent, indirect combined and simultaneous. It is intended as a working tool for experimental scientists and engineers of all disciplines who work with instrumentation. It is also a good tool for undergraduate and graduate natural science and engineering students and for technicians performing complex measurements in industry.

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Margaret J. Safrit, 1973      **Theoretical and Practical Limits of Measurement Accuracy**, 1983      *Annual Symposium on Photomask Technology and Management*, 1998      The Potential of Claims Data to Support the Measurement of Health Care Quality

Jennifer Hicks, 2003. Current information suggests that millions of Americans fail to receive adequate quality health care. The author examines whether the use of claims data for measuring health care quality is being fully realized and identifies electronic data that might increase the potential for quality measurement. The author found that quality measurement relying extensively on medical records is prohibitively high for most organizations and presents four options for quality measurement: 1 the status quo, 2 expanded use of claims data, 3 expanded use of medical records, and 4 expanded use of both claims data and medical records.

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Proceedings of the ... International Conference on Offshore Mechanics and Arctic Engineering, 1989      **Instruments**

**for Clinical Health-care Research** Marilyn Frank-Stromborg, Sharon J. Olsen, 1997. A definitive volume for clinical health care research, this book covers how to measure and assess health and function, health promotion activities, outcomes of care, and clinical problems. A significant revision to *Instruments for Clinical Nursing Research*, this second edition has kept the same goals: review of available clinical research instruments to measure select clinical phenomenon, the description of psychometric properties of each tool, review of selected studies employing the tool, identification of instrument strengths and weaknesses, and discussion of the relevance of each instrument for nursing.

**Forecasting and Market Analysis**

**Techniques** George Kress, John Snyder, 1994-05-17. Sales forecasting and market analysis are the cornerstones of the

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*Accuracy 2002* Gary Hunter, Kim Lowell, 2002      **Proceedings, 55th Annual California Regional Meeting, March 27-29, 1985, Bakersfield, California**  
Society of Petroleum Engineers of AIME. California Regional Meeting, 1985      *Environmental Engineering Society of Environmental Engineers (Great Britain), 1965*

## **Evaluating Measurement Accuracy A Practical Approach** Book Review: Unveiling the Power of Words

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