1. Record Nr. UNINA9910155138103321 Autore Bell Suzanne <1940, > Titolo Measurement uncertainty in forensic science: a practical guide / / by Suzanne Bell Boca Raton, FL:,: CRC Press, an imprint of Taylor and Francis,, [2016] Pubbl/distr/stampa ©2017 **ISBN** 1-315-40090-1 1-315-40089-8 1-315-40088-X Descrizione fisica 1 online resource (174 pages): illustrations, tables Disciplina 363.25015195 Forensic sciences - Statistical methods Soggetti Measurement uncertainty (Statistics) Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Nota di bibliografia Includes bibliographical references at the end of each chapters and index. Nota di contenuto Cover -- Half Title -- Title Page -- Copyright Page -- Dedication --Contents -- List of Figures -- List of Tables -- Preface -- Author -- 1 Forensic Measurements, Metrology, and Uncertainty -- 1.1 Consequence -- 1.2 The Best Way -- 1.3 Measurement Science and Traceability -- 1.4 Accuracy and Variability -- 1.5 Foundational Skills and Materials -- 1.6 Summary and Preview -- References -- 2 Sources of Uncertainty -- 2.1 Where Does Uncertainty Come From? -- 2.2 Diameter of a Penny -- 2.3 Weighing Pennies -- 2.4 The Need to Know -- 2.5 A Flowchart -- 2.6 The Elephant in the Room -- 2.7 Summary --Further Reading -- 3 Foundational Concepts -- 3.1 Closeness to the True Value -- 3.2 Replicate Measurements and Spread -- 3.3 The Normal Distribution (and Others) -- 3.4 Figures of Merit -- 3.5 Summary and Preview -- References -- 4 Process and Procedures --4.1 Uncertainty Defined -- 4.2 Process of Uncertainty Estimation -- 4.3 Tools for Identifying Contributors: Measurement of Density -- 4.4 Summary and Preview -- References -- 5 Measurement Assurance: Distances, Crime Scenes, and Firearms -- 5.1 Distance Measurement --5.2 Capturing Uncertainty -- 5.3 Firearms Measurements -- 5.4

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Sommario/riassunto

In the courtroom, critical and life-changing decisions are made based on quantitative forensic science data. There is often a range in which a measured value is expected to fall and, in this, an inherent uncertainty associated with such measurement. Uncertainty in this context is not error. In fact, estimations of uncertainty can add to the utility and reliability of quantitative results, be it the length of a firearm barrel, the weight of a drug sample, or the concentration of ethanol in blood. Measurement Uncertainty in Forensic Science: A Practical Guide describes and defines the concepts related to such uncertainty in the forensic context. The book provides the necessary conceptual background and framework a baseline for developing and deploying reasonable and defensible uncertainty estimations across forensic disciplines. Information is presented conceptually, using easily understood examples, to provide a readable, handy reference for scientists in the laboratory, as well as investigators and legal professionals who require a basic understanding of the science underpinning measurement results.