

**A HANDBOOK OF PHYSICS
MEASUREMENTS. VOL. 1:
FUNDAMENTAL
MEASUREMENTS, PROPERTIES OF
MATTER AND OPTICS**

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A handbook of physics measurements. Vol. 1: Fundamental measurements, properties of matter and optics by Ervin S. Ferry

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ERVIN S. FERRY

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A HANDBOOK OF PHYSICS MEASUREMENTS

BY
ERVIN S. FERRY

IN COLLABORATION WITH
O. W. SILVEY, G. W. SHERMAN, JR.
AND D. C. DUNCAN

VOL. I
FUNDAMENTAL MEASUREMENTS,
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PREFACE

As stated in the preface to one of the earlier forms in which a part of this book has appeared:

"The aim of the present work is to furnish the student of pure or applied science with a self-contained manual of the theory and manipulation of those measurements in physics which bear most directly upon his subsequent work in other departments of study and upon his future professional career.

"Only those experimental methods have been included that are strictly scientific and that can be depended upon to give good results in the hands of the average student. Although several pieces of apparatus, experimental methods, and derivations of formulæ that possess some novelty appear, our fixed purpose has been to use the standard forms except in cases where an extended trial in large classes has demonstrated the superiority of the proposed innovation.

"It has been assumed that the experiment is rare that should be performed before the student understands the theory involved and the derivation of the formula required. Consequently the theory of each experiment is given in detail and the required formula developed at length. The more important sources of error are pointed out, and means are indicated by which these errors may be minimized or accounted for.

The book is designed to be commenced during the second college year. The greater part of the experiments requires no mathematics beyond trigonometry and college algebra. But wherever the calculus methods would result in economy of time and mental effort they have been employed.

No student except one specializing in physics would perform all 108 experiments included in the two volumes. Other students, after performing the necessary experiments on the properties of matter, would limit themselves to the groups bearing directly upon

their principal study. Thus, few technical students except those of electrical engineering would do the work on damped vibration and harmonic analysis; few except those of chemical engineering would do the work on indices of refraction, polarimetry, and quantitative spectrum analysis.

ERVIN S. FERRY.

PURDUE UNIVERSITY, LAFAYETTE, INDIANA,

June 14, 1918.

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