GASEOUS RADIATION DETECTORS

Widely used in high-energy and particle physics, gaseous radiation detectors are undergoing continuous development. The first part of this book provides a solid background for understanding the basic processes leading to the detection and tracking of charged particles, photons, and neutrons.

Continuing then with the development of the multi-wire proportional chamber, the book describes the design and operation of successive generations of gas-based radiation detectors, as well as their use in experimental physics and other fields. Examples are provided of applications for complex event tracking, particle identification, and neutral radiation imaging. Limitations of the devices are discussed in detail.

Including an extensive collection of data and references, this book is ideal for researchers and experimentalists in nuclear and particle physics.

This title, first published in 2015, has been reissued as an Open Access publication on Cambridge Core.

FABIO SAULI is Research Associate for the Italian TERA Foundation, responsible for the development of medical diagnostic instrumentation for hadrontherapy. Prior to this, he was part of the Research Staff at CERN in the Gas Detectors Development group, initiated by Georges Charpak, before leading the group from 1989 until his retirement in 2006. He has more than 200 scientific publications, and is an editor of several books on instrumentation in high energy physics. His achievements include inventing the Gas Electron Multiplier (GEM), which is widely used in advanced detectors.

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GASEOUS RADIATION DETECTORS

Fundamentals and Applications

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