



# Semiconductor Detector Systems (Series on Semiconductor Science and Technology)

By Helmuth Spieler

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## Semiconductor Detector Systems (Series on Semiconductor Science and Technology) By Helmuth Spieler

Semiconductor sensors patterned at the micron scale combined with custom-designed integrated circuits have revolutionized semiconductor radiation detector systems. Designs covering many square meters with million of signal channels are now commonplace in high-energy physics and the technology is finding its way into many other fields, ranging from astrophysics to experiments at synchrotron light sources and medical imaging. This book is the first to present a comprehensive discussion of the many facets of highly integrated semiconductor detectors systems, covering sensors, signal processing, transistors, and circuits, low-noise electronics, and radiation effects. The diversity of design approaches is illustrated in a chapter describing systems in high-energy physics, astronomy, and astrophysics. Finally, a chapter "Why Things Don't Work" discusses common pitfalls. Profusely illustrated, this book includes comprehensive discussions of sensors, signal processing, and electronics. Including fine tutorial material, it provides a unique reference in a key area of modern science.

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### **Editorial Review**

#### Review

The beauty of this book is that it takes a system approach, which combines the understanding of the physics of semiconductor detectors with the necessary electronics. I believe this book will be the standard reference work on the subject. [...] Spieler is well known as a world expert in this field. As well as being very knowledgeable, he takes great pleasure in communicating his understanding. Tony Weidberg, University of Oxford ... a great topic, ... a marvellous teacher. Chris Damerell, Rutherford Appleton Laboratory ... nice and thorough, ... a great reference book. Joseph Incandela, University of California at Santa Barbara ... could become a classic. Ken Smith, University of Glasgow

#### About the Author

Helmuth Spieler  
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PhD 1974 in nuclear physics at Technical University Munich.

1975-1981 Gesellschaft für Schwerionenforschung (GSI), Darmstadt.

Since 1981 at Lawrence Berkeley National Laboratory. Senior Physicist in the Physics Division.

Extensive experience both as a user and designer of advanced detector systems, primarily in high energy physics. Over two decades experience in developing novel semiconductor detector systems for forefront experiments. Is internationally known for his lectures on detectors, signal processing, and electronics. Has served as a technical and project reviewer for major detectors in the U.S., Europe, and Japan, both for high energy physics and astrophysics experiments.

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##### **Sam Grimes:**

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