

**PFEIFFER**  **VACUUM**



## ASM 340

**Best in class leak detector, using helium and hydrogen**

- Unique capability to detect leaks starting at 100 mbar
- Fastest time to test in its class
- Low maintenance due to rugged design
- User friendly and customizable interface



Everything about leak detection

[leak-detection.pfeiffer-vacuum.com](http://leak-detection.pfeiffer-vacuum.com)

Are you looking for a perfect vacuum solution?  
Please contact us:



**Pfeiffer Vacuum, Inc. · USA**  
T 800-248-8254  
F 603-578-6550  
[contact@pfeiffer-vacuum.com](mailto:contact@pfeiffer-vacuum.com)  
[www.pfeiffer-vacuum.com](http://www.pfeiffer-vacuum.com)

In his introduction, Ball writes that the case histories of Planck, Heisenberg, and Debye display “the grey zone between complicity and resistance adjusted to Nazi rule.” With regard to Planck, he adopts, without further probing, the conclusion of biographer John Heilbron, who summarized Planck’s case with the title of his book *The Dilemmas of an Upright Man: Max Planck as Spokesman for German Science* (University of California Press, 1986). Heisenberg’s case is more controversial, but here, too, Ball adds little new information; mostly he relies on David Cassidy’s authoritative biography, *Uncertainty: The Life and Science of Werner Heisenberg* (W. H. Freeman, 1991).

Among historians, Debye’s case is most controversial. It turned into a scandal when science writer Sybe Rispens portrayed him as a Nazi sympathizer; others regarded him as a victim. Ball’s analysis of those diverging historical accounts deserves attention. In some details the narrative violates its stated goal to avoid black-and-white interpretations. For example, Philipp Lenard and Johannes Stark, the spokesmen for the Aryan Physics movement, appear from the beginning of the book as outspoken villains. Lenard, however, only became an aggressive enemy of Albert Einstein in 1920; in 1913 he revealed in a letter to Arnold Sommerfeld how much he appreciated Einstein. Stark, too, was one of Einstein’s early admirers.

Both Lenard’s and Stark’s conversion to fanatic enemies of “Jewish” physics was largely a result of German nationalism resulting from World War I—right-wing Germans associated the Jews with the defeat of Germany and the rise of communism. Also, Stark did not have to defend himself before the Nuremberg court, as Ball suggests on page 254, but before a *Spruchkammer*, a local denazification court.

Another deficiency concerns the annotation. In most places, Ball pulls quotes from the secondary literature without reference to the original archival sources. Furthermore, he only references direct quotes, which makes it difficult for the reader to discern the source of other, unquoted material. This critique may sound like historical pettiness, but a narrative concerned with controversial interpretations should avoid any doubts about the sources from which its conclusions are derived.

Apart from those few criticisms, *Serving the Reich* is a remarkable achievement—not only for its popularization of historical debates but also for

the depth of its analysis. Both the layperson interested in the moral dilemma of physicists under Hitler and the historian familiar with the controversial debates will find Ball’s account highly instructive.

**Michael Eckert**  
*Deutsches Museum*  
*Munich*

## Sea-Level Science Understanding Tides, Surges, Tsunamis and Mean Sea-Level Changes

David Pugh and Philip Woodworth  
Cambridge U. Press, 2014. \$99.00  
(407 pp.). ISBN 978-1-107-02819-7

The study of long-term sea-level variations has intensified in the past two decades, largely because those variations are used as indicators of global warming. Global climate models call for acceleration in the rate of sea-level rise over the next century; the negative impact on low-lying coastal infrastructure and coastal populations could be significant.



For more than three decades, David Pugh and Philip Woodworth have been two of the most respected and referenced experts in the field of sea-level science. Their combined research and publication experience continues to inform the community. What’s most impressive is the consistency and continuity of their work. *Sea-Level Science: Understanding Tides, Surges, Tsunamis and Mean Sea-Level Changes* is an acknowledged second edition to Pugh’s *Tides, Surges and Mean Sea-Level: A Handbook for Engineers and Scientists* (Wiley, 1987). This update is a perfect companion to the earlier work.

*Sea-Level Science* will immediately become a useful and practical reference for government and private-industry educators, academic researchers, and coastal scientists and engineers, whether or not they are directly involved in the field of oceanography. The book is comprehensive; it covers the breadth of sea-level variations across the frequency spectrum—tsunamis, meteotsunamis, storm surges, periodic (for example, hourly) tidal variations, decadal sea-level variations, and variations spanning a century or more. The technical material in each chapter gives readers an opportunity to obtain a thorough understanding of the latest developments in the field.

And because it consistently achieves the right technical level, including in its fine presentation of the fundamentals and basic equations, *Sea-Level Science* will be useful to those who may be familiar with one particular subject area but not with the full context of sea-level science. The appendices nicely complement the chapters and provide a deeper understanding of key topics. For example, they present fundamental hydrostatic and hydrodynamic equations; discuss tidal, wind-driven, and inertial current dynamics; and explain how times and heights of high and low tides can be derived from the water-level time series using traditional harmonic analyses.

Each area covered in the book has its own community of experts, whose work can be found in the thorough end-of-chapter reference lists. Linking those areas—which will be aided by the book's broad and clear presentation—is a task ripe for collaboration and one that promises to yield a more profound understanding of sea-level science.

It's not easy to hit the mark when attempting to cover a broad array of subjects and treat each one comprehensively. That mark has been hit in *Sea-Level Science*.

Stephen Gill

National Oceanic and  
Atmospheric Administration  
Silver Spring, Maryland

## new books

### astronomy and astrophysics

**Budget Astrophotography: Imaging with Your DSLR or Webcam.** T. J. Jensen. Springer, 2015. \$29.99 *paper* (247 pp.). ISBN 978-1-4939-1772-3

**The Fundamentals of Modern Astrophysics: A Survey of the Cosmos from the Home Planet to Space Frontiers.** M. Y. Marov. Springer, 2015. \$129.00 (336 pp.). ISBN 978-1-4614-8729-6

**Infrared Astronomy — Seeing the Heat: From William Herschel to the Herschel Space Observatory.** D. L. Clements. CRC Press, 2015. \$49.95 (266 pp.). ISBN 978-1-4822-3727-6

**Magnetic Fields in Diffuse Media.** A. Lazarian, E. M. de Gouveia Dal Pino, C. Melioli, eds. Springer, 2015. \$229.00 (623 pp.). ISBN 978-3-662-44624-9

**Searching for the Long-Duration Gamma-Ray Burst Progenitor.** R. A. Mesler III. Springer, 2014. \$129.00 (111 pp.). ISBN 978-3-319-06625-7

**Statistical Methods for Astronomical Data Analysis.** A. K. Chattopadhyay, T. Chattopadhyay. Springer, 2014. \$109.00 (349 pp.). ISBN 978-1-4939-1506-4

**Unlocking the Secrets of White Dwarf**

**Stars.** H. M. Van Horn. Springer, 2015. \$29.99 *paper* (324 pp.). ISBN 978-3-319-09368-0

### biological and medical physics

**5th International Conference on Biomedical Engineering in Vietnam.** V. Van Toi, T. H. Lien Phuong, eds. Springer, 2015. \$259.00 *paper* (518 pp.). ISBN 978-3-319-11775-1

**Advance in Structural Bioinformatics.** D. Wei, Q. Xu, T. Zhao, H. Dai, eds. Springer and Shanghai Jiao Tong U. Press, 2015. \$209.00 (383 pp.). ISBN 978-94-017-9244-8

### popularizations

**A Ray of Light in a Sea of Dark Matter.** C. Keeton. Rutgers U. Press, 2014. \$14.95 *paper* (89 pp.). ISBN 978-0-8135-6534-7

### quantum physics

**Introduction to Quantum Information Science.** M. Hayashi et al. Springer, 2014. \$99.00 (332 pp.). ISBN 978-3-662-43501-4

**Quantum Fractals: From Heisenberg's Uncertainty to Barnsley's Fractality.** A. Jadczyk. World Scientific, 2014. \$110.00 (345 pp.). ISBN 978-981-4569-86-6

**Quantum Machines: Measurement and Control of Engineered Quantum Systems.** M. Devoret, B. Huard, R. Schoelkopf, L. F. Cugliandolo, eds. Oxford U. Press, 2014. \$74.95 (568 pp.). ISBN 978-0-19-968118-1

### society and government

**Ensuring STEM Literacy: A National Conference on STEM Education and Public Outreach.** J. G. Manning, M. K. Hemenway, J. B. Jensen, M. G. Gibbs, eds. Astronomical Society of the Pacific, 2014. \$77.00 (461 pp.). ISBN 978-1-58381-850-3

### space and planetary science

**Interactions of Earth's Magnetotail Plasma with the Surface, Plasma, and Magnetic Anomalies of the Moon.** Y. Harada. Springer, 2014. \$129.00 (111 pp.). ISBN 978-4-431-55083-9

**The New Moon: Water, Exploration, and Future Habitation.** A. Crotts. Cambridge U. Press, 2014. \$39.99 (514 pp.). ISBN 978-0-521-76224-3

**Outstanding Problems in Heliophysics: From Coronal Heating to the Edge of the Heliosphere.** Q. Hu, G. P. Zank, eds. Astronomical Society of the Pacific, 2014. \$77.00 (272 pp.). ISBN 978-1-58381-852-7

### statistical physics and thermodynamics

**Nonequilibrium Statistical Physics: Linear Irreversible Processes.** N. Pottier. Oxford U. Press, 2014. \$59.95 *paper* (491 pp.). ISBN 978-0-19-871227-5

**Thermal Properties of Solids at Room and Cryogenic Temperatures.** G. Ventura, M. Perfetti. Springer, 2014. \$129.00 (216 pp.). ISBN 978-94-017-8968-4

## Analog PID Controller



**SIM960 ... \$1750 (U.S. List)**

- Analog signal path / digital control
- 100 kHz bandwidth
- Low-noise front end
- P, I, D & Offset settable to 0.5 %
- Anti-windup (fast saturation recovery)
- Bumpless transfer (manual to PID)

The SIM960 Analog PID Controller is intended for the most demanding control applications, combining analog signal paths with digital parameter setting. High-bandwidth control loops may be implemented without discrete time or quantization artifacts. Gain can be set from 0.1 to 1000, and an internal ramp generator can slew the setpoint voltage between start and stop levels.



*SIM900 Mainframe loaded with a variety of SIM modules*

**SRS** Stanford Research Systems  
Phone (408) 744-9040  
[www.thinkSRS.com](http://www.thinkSRS.com)