

# Bookshelf

## CERN's accelerators, experiments and international integration 1959–2009. *The European Physical Journal H* 36 (4).

By *Herwig Schopper et al. (ed.)*

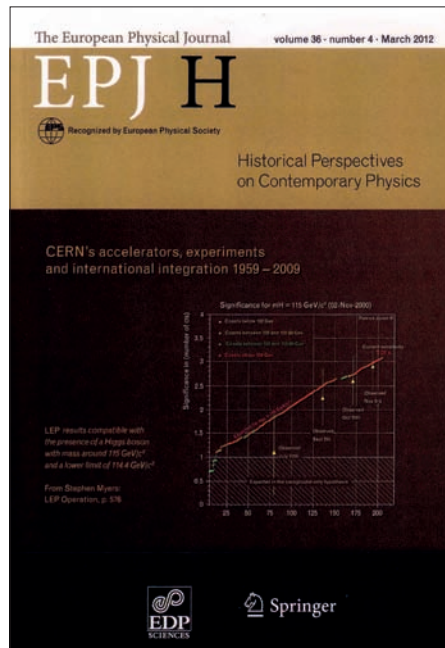
Springer

In 2009, CERN's Proton Synchrotron (PS) reached its half century, having successfully accelerated protons to the design energy for the first time on 24 November 1959. Still in operation more than 50 years later, it is not only a key part of the injection chain to the LHC but also continues to supply a variety of beams to other facilities, from the Antiproton Decelerator to the CERN Neutrinos to Gran Sasso project. During its operation, the PS witnessed big changes at CERN; at the same time, particle physics itself advanced almost beyond recognition, from the days before quarks to the current reign of the Standard Model.

At the close of the anniversary year, CERN held a symposium in honour of the accelerator developments at CERN and the concurrent rise of the Standard Model: "From the PS to the LHC: 50 years of Nobel Memories in High-Energy Physics" (*CERN Courier* January/February 2010 p24.) Fittingly, at the end of 2009, the LHC – the machine that everyone expects to take the first steps beyond the Standard Model – was just beginning to come into its stride after the first collisions in November.

Key players who had been close to all of these developments, including 13 Nobel laureates, came together for the symposium. Now, several of the talks have been written up and published in the latest edition of *The European Physical Journal H* – the journal launched in 2010 as a common forum for physicists, historians and philosophers of science (*CERN Courier* November 2010 p48). The edition also includes three additional articles that were invited to provide a more complete picture, by covering CERN's Intersecting Storage Rings, the history of stochastic cooling and searches for the Higgs boson at the Large Electron-Positron (LEP) collider – which started up in 1989 and hence celebrated its 30th anniversary at the symposium.

Dip into the pages and you will find many gems: among the Nobel laureates, Jerome Friedman describes the work at SLAC that revealed the reality of quarks, which were unheard of in 1959; Jim Cronin revisits the early 1960s when he and his colleagues discovered CP violation; Jack Steinberger looks back at early experiences at CERN; Carlo Rubbia presents the story of the discovery of W and Z bosons at



CERN; and Burt Richter recalls early ideas on LEP, from his days on sabbatical at CERN. On the accelerator side, the articles detail developments with the PS, as well as the highlights (and lowlights) of the construction and running of LEP. The invited article on stochastic cooling includes the work of Simon van der Meer, who shared the Nobel prize with Carlo Rubbia in 1984. Sadly, he was too ill to attend the symposium and passed away in March 2011 (*CERN Courier* June 2011 p24).

All of the articles provide an interesting view of remarkable events through the reminiscences of people who were not simply "there", but who played a big part in making them happen. They are a fascinating reminder of what particle physics was like in the past and well worth a read. They also reflect the different styles of the various individuals, but not so much, perhaps, as did the original presentations at the symposium. To get the full flavour, and to see all the participants, take a look at the recordings at <http://indico.cern.ch/conferenceDisplay.py?confId=70765>. There you will find still more gems.

● *Christine Sutton, CERN.*

## Books received

### The Fundamentals of Imaging: From Particles to Galaxies

By *Michael Mark Woolfson*

Imperial College Press

Hardback: £65 \$98

Paperback: £32 \$48

E-book: £87 \$127

The range of imaging tools, both in the type of wave phenomena used and in the devices that utilize them, is vast. This book illustrates this range, with wave phenomena that cover the entire electromagnetic spectrum, as well as ultrasound, and devices that vary from those that simply detect the presence of objects to those that produce images in exquisite detail. The aim also is to give an understanding of the principles behind the imaging process and a general account of how those principles are utilized, without delving into the technical details of the construction of specific devices.

### A Modern Introduction to Particle Physics (3rd edition)

By *Fayyazuddin and Riazuddin*

World Scientific

Hardback: £54 \$82

The Pakistani brothers, who were both students of Abdus Salam, wrote the first edition of their book in 1992, based on lectures given in various places. Aimed at senior undergraduates or graduate students, it provides a comprehensive account of particle physics. Having first been updated in 2000, this latest edition contains many revised chapters, in particular those that cover subjects such as heavy flavours, neutrinos physics, electroweak unification, supersymmetry and string theory. Another addition is a substantial number of new problems. This self-contained book covers basic concepts and recent developments, as well as overlaps between astrophysics, cosmology and particle physics.

### Principles of Radiation Interaction in Matter and Detection (3rd edition)

By *Claude Leroy and Pier-Giorgio Rancoita*

World Scientific

Hardback: £153 \$232

E-book: \$302

Like its predecessors, this third edition addresses the fundamental principles of the interaction between radiation and matter and the principles of particle detection and detectors in a range of fields, from low to high energy, and in space physics and the medical environment. It provides abundant information about the processes of electromagnetic and hadronic energy deposition in matter, detecting systems, and performance and optimization of detectors, with additional information in the third edition. A part of the book is also directed towards courses in medical physics.

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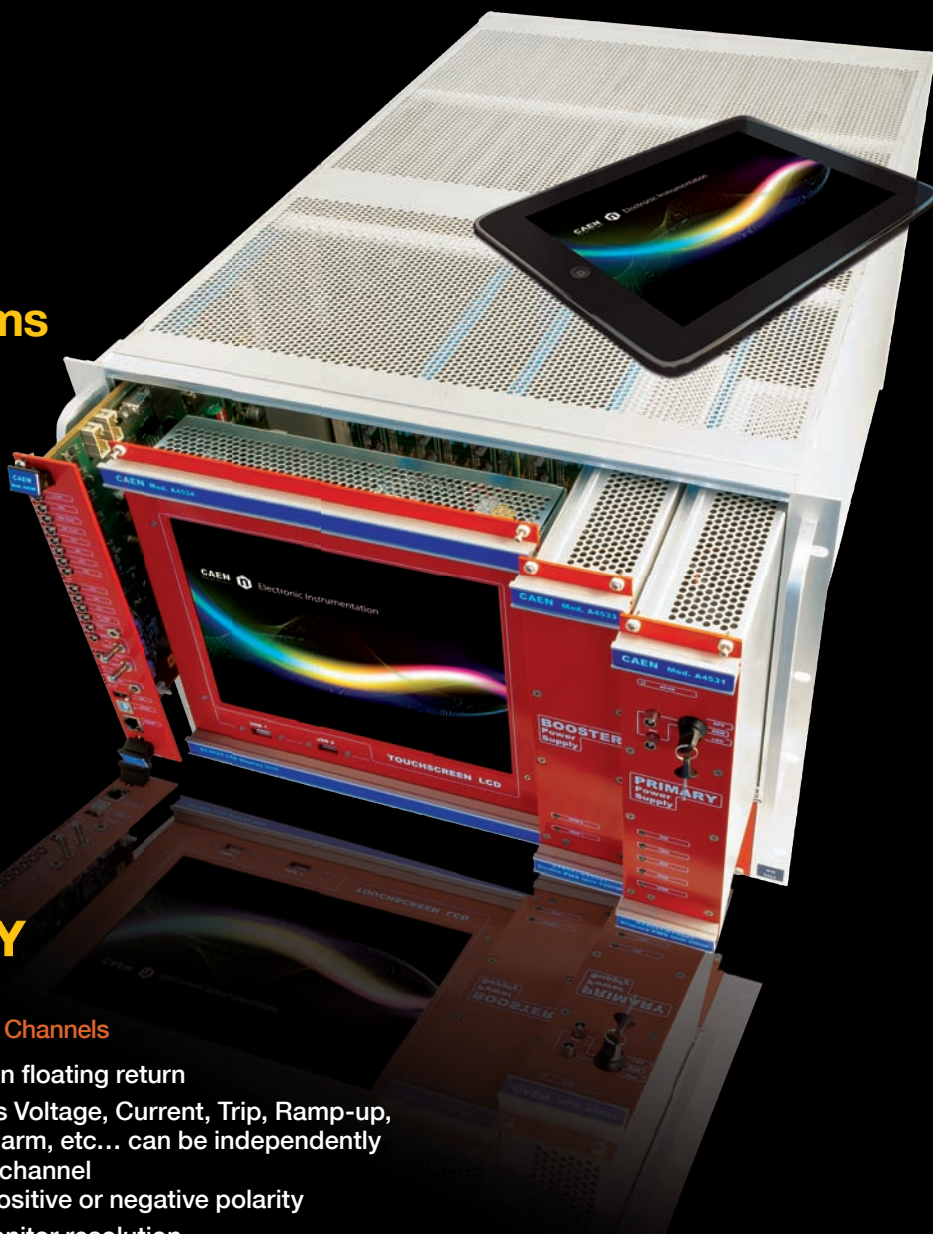
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