

## THE PS

# The proton synchrotron leads the news in *CERN Courier* again

It seems to be getting quite a habit for the proton synchrotron to provide the most important CERN news every month.

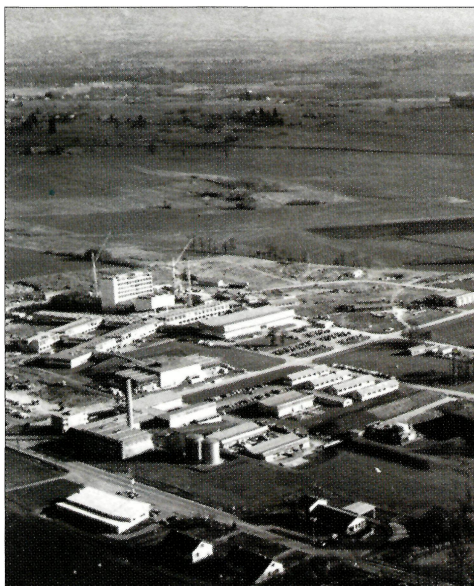
On 24 August, a 50 MeV particle beam was obtained at the output end of the last of the three LINAC cavities. Final energy of the LINAC was thus reached.

That evening, the accelerated proton current reached half a milliampere. Tests made at night – maximum energy is only produced at night so as to avoid unnecessary radiation hazards for the staff – have since made it possible to increase this figure to nearly 5 milliamperes. This is almost the maximum beam intensity for this part of the machine. The beam then passed through a port in the radiation shielding wall at the end of the linear accelerator room.

Further on, the proton beam entered the inflector, which should be completely installed by the middle of September. The purpose of this device is to bend the beam emerging from the linear accelerators into the 100 m radius orbit of the proton synchrotron ring. The inflector gives the 50 MeV beam the optimum shape and characteristics for use in the big circular accelerator.

After the final adjustments have been made on the inflector, the beam will enter the synchrotron vacuum chamber for a distance of about 15–20 magnet units. This distance corresponds to what is known by scientists as a “betatron wavelength”, and will allow careful study of the behaviour of the beam after it has been properly injected into the proton synchrotron. Simultaneously, the beam may be directed into the circular vacuum chamber to make one or more complete revolutions. During this preliminary test, the beam will not be accelerated.

All this is scheduled to happen in September. In October, all the components of the radiofrequency accelerating system will have been assembled. The beam will probably be accelerated for the first time at the end of that month.



Part of an aerial photo of CERN and the PS ring, taken in April 1959 and used on the cover of early issues of the *CERN Courier*.

The running-in period will follow. This may perhaps end with the announcement of a high-energy beam before the end of 1959. In the opinion of those concerned, this will be the critical period. Although it may be relatively easy to design the components of a machine, test them separately and assemble them, it is the perfect running of the machine as a whole that always gives the most trouble.

Of course, there is a precedent – the energizing of the electromagnet – when a whole system was brought into regular operation without any major snags. A magnetic field corresponding to the maximum energy of the accelerator, 25 GeV, was obtained. Apart from some details needing adjustment, only one addition will be necessary: in the interphase transformer assembly.

### Putting things right

On the subject of corrections, readers have been kind enough to assist an absent-minded proof-reader. Thanks to their eagle eye, two misprints have been spotted in the French

## EDITOR'S NOTE



Since it first appeared in 1959, the *CERN Courier* has featured many articles on the accelerators at CERN. The image above shows Franco Bonaudi, who was a leading figure in the design and construction of the laboratory's main machines from the very beginning. He is seen reading the second edition of the *CERN Courier*, the leading article of which is reproduced here.

edition of our first issue. It is certainly rather incongruous to have reduced the CERN site to a tenth of its actual area. The organization will run much better if it is restored to its original size of about 41 hectares.

Also – and the reader will probably have corrected this himself from the context – the final energy of the proton synchrotron should have read 25 000 million electron-volts and not 25 million.

To err is human, as they say.

● From *CERN Courier* September 1959 p1.



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### ELECTRONICS AND PHOTONICS

- A: Amorphous and Nanocrystalline Silicon Science and Technology—2005
- B: Materials, Technology, and Reliability of Advanced Interconnects
- C: Recent Advances in Superconductivity—Materials Synthesis, Multiscale Characterization, and Functionally Layered Composite Conductors
- D: Materials, Integration, and Technology for Monolithic Instruments
- E: Semiconductor Defect Engineering—Materials, Synthetic Structures, and Devices
- F: Thin-Film Compound Semiconductor Photovoltaics
- G: Advanced Gate Dielectric Stacks on High-Mobility Semiconductors
- H: Giant-Area Electronics on Nonconventional Substrates
- I: Organic Thin-Film Electronics
- J: Micro- and Nanosystems—Materials and Devices

### BIOLOGICAL AND MOLECULAR MATERIALS

- K: Biological and Bio-Inspired Materials and Devices
- L: Structure and Mechanical Behavior of Biological Materials
- M: Developing Nano-Bio Interfaces
- N: Polymer Gels for Emerging Technologies

### NANOSCALE AND INTERFACIAL PHENOMENA AND RELATED MATERIALS

- O: Thin Films—Stresses and Mechanical Properties XI
- P: In-situ Studies of Gas/Solid Surface Reaction Dynamics
- Q: "Smart" Surfaces and Interfaces
- R: Nanoporous and Nanostructured Materials for Catalysis, Sensor, and Gas Separation Applications
- S: Magnetic Nanoparticles and Nanowires

- T: Nanostructured Diamond and Diamond-Like Materials for Micro- and Nanodevices
- U: Science and Applications of Carbon Nanotubes

### NEW APPROACHES TO MATERIALS SYNTHESIS AND FABRICATION

- V: Rare-Earth Doping for Optoelectronic Applications
- W: Chemical-Mechanical Planarization—Integration, Technology, and Reliability
- Y: Solvothermal Synthesis and Processing of Materials
- Z: Chemistry of Nanomaterial Synthesis and Processing
- AA: Dynamic, Self-Organizing Systems in Multifunctional Nanomaterials and Nanostructures

### MODELING AND COMPUTATION

- BB: Mechanical Properties of Nanostructured Materials—Experiments and Modeling
- CC: Coupled Nonlinear Phenomena—Modeling and Simulation for Smart, Ferroic, and Multiferroic Materials
- DD: Heat and Mass Transport at Nanoscale—From Fundamentals to Devices
- EE: Linking Length Scales in the Mechanical Behavior of Materials

### GENERAL

- FF: Advanced Devices and Materials for Laser Remote Sensing
- GG: Materials and Technology for Hydrogen Storage and Generation
- HH: Integrated Nanosensors
- X: Frontiers of Materials Research

## MEETING ACTIVITIES

### SYMPOSIUM TUTORIAL PROGRAM

Available only to meeting registrants, the symposium tutorials will concentrate on new, rapidly breaking areas of research and are designed to encourage the exchange of information by meeting attendees during the symposium.

### EXHIBIT

A major exhibit encompassing the full spectrum of equipment, instrumentation, products, software, publications, and services is scheduled for March 29–31 in Moscone West, convenient to the technical session rooms.

### SYMPOSIUM ASSISTANT OPPORTUNITIES

Graduate students who are interested in assisting in the symposium rooms during the 2005 MRS Spring Meeting are encouraged to apply for a Symposium Assistant position. By assisting in a minimum of four half-day sessions, students will receive a complimentary student registration, a one-year MRS student membership commencing July 1, 2005, and a stipend to help defray expenses. Applications will be available on our Web site by November 1.

### CAREER CENTER

A Career Center for MRS members and meeting attendees will be offered in Moscone West during the 2005 MRS Spring Meeting.

### PUBLICATIONS DESK

A full display of over 850 books will be available at the MRS Publications Desk. Symposium Proceedings from both the 2004 MRS Spring and Fall Meetings will be featured.

### GRADUATE STUDENT AWARDS

The Materials Research Society announces the availability of Gold and Silver Awards for graduate students conducting research on a topic to be addressed in the 2005 MRS Spring Meeting symposia. Applications will be available on our Web site by October 1 and must be received at MRS headquarters by January 5, 2005.

For additional meeting information, visit the MRS Web site at

[www.mrs.org/meetings/](http://www.mrs.org/meetings/)

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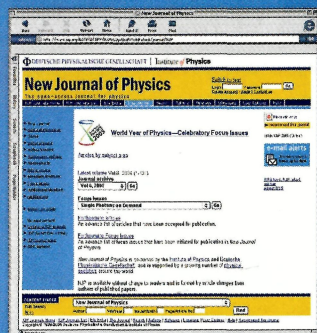
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