

APS show

at the March General Meeting of the
American Physical Society

INDIANA CONVENTION CENTER &
HOOSIER DOME
March 17-19, 1992

The largest APS Meeting of the Year. 4,000
papers expected. Invited Papers organized
by Condensed Matter-Chemical-High
Polymer and Biological Physics Divisions.

Exhibitors: (as of 1/92)

ACADEMIC PRESS • ADDISON
WESLEY PUBL. • AJA
INTERNATIONAL • AMERICAN
INSTITUTE OF PHYSICS •
AMERICAN MAGNETICS •
AMPLIFIER RESEARCH • ANDEEN-
HAGERLING • APD CRYOGENICS •
BALZERS • BIOSYM
TECHNOLOGIES • BLAKE
INDUSTRIES • BROOKS/COLE
PUBL. • BURLEIGH INSTRUMENTS
• CAMBRIDGE UNIV. PRESS •
COHERENT LASER GROUP •
CONFERENCE BOOK SERVICE •
COOKE VACUUM PRODUCTS •
CRYOFAB • CRYOMAGNETICS •
CRYOMECH • CVI • DIGITAL
INSTRUMENTS • EG&G PRINCETON
APPLIED RESEARCH • ELSEVIER
SCIENCE PUBL. • GMW
ASSOCIATES • GORDON & BREACH
• GRANVILLE-PHILLIPS •
INTERNATIONAL CRYOGENICS •
ITHACO • JANIS RESEARCH •
KEITHLEY INSTRUMENTS • LAKE
SHORE CRYOTRONICS • KURT J.
LESKER CO. • LEYBOLD
TECHNOLOGIES • LINEAR
RESEARCH • MCALLISTER
TECHNICAL SERVICES • MDC
VACUUM PRODUCTS • MMR
TECHNOLOGIES • MORRIS
RESEARCH • OMICRON
ASSOCIATES • OXFORD
INSTRUMENTS NA • OXFORD
UNIVERSITY PRESS • PARK
SCIENTIFIC • PERKIN ELMER •
PLENUM PUBLISHING • PRECISION
CRYOGENIC SYSTEMS •
PRINCETON INSTRUMENTS •
PRINCETON RESEARCH
INSTRUMENTS • PRINCETON
UNIVERSITY PRESS • QUANTAR
TECHNOLOGY • QUANTUM DESIGN
• RHK TECHNOLOGY • RMC • SAIC
• SCIENCETECH INC. • SCIENTIFIC
INSTRUMENTS • SIEMENS
ANALYTICAL X-RAY INSTRUMENTS •
SOLOMAT INSTRUMENTATION •
SOUTH BAY TECHNOLOGY • SPEX
INDUSTRIES • SPRINGER-VERLAG
NY • STANFORD COMPUTER
OPTICS • STANFORD RESEARCH
SYSTEMS • SUPERCONDUCTOR
COMPONENTS • TAYLOR &
FRANCIS • TOPOMETRIX • TRI
RESEARCH • TRIPOS ASSOCIATES
• VG/FISONS INSTRUMENTS •
JOHN WILEY & SONS • J.A.
WOOLLAM CO. • WORLD
SCIENTIFIC PUBL. •

For exhibit space, contact:
Exhibits Division
AMERICAN INSTITUTE OF PHYSICS
335 East 45th Street
New York, NY 10017
Tel: (212) 661-9260
Fax: (212) 661-2036

both processes. Three-jet analysis of e^+e^- annihilation, which is claimed to confirm the parton model, assumes arbitrarily that the multijet background from soft hadronic processes is minimal. Some phenomenologists have reported that the rate of four-jet events in high-energy e^+e^- annihilation is much larger than can be explained by the parton model. Profuse production of four or more jets at higher energies is characteristic of soft hadronic processes, but not of the parton model. Unfortunately, those who claim to have confirmed the parton model failed to report this crucial excessive rate of four-jet events in e^+e^- annihilation.

In spite of a few noteworthy successes in explaining cross-section ratios, there are many serious objections to the hasty application of the parton model. Any claim of the confirmation of the existence of quarks or gluons is as unfounded as the claims of confirmation of the modern parton model on which it is based.

References

1. J. D. Bjorken, Phys. Rev. **179**, 1547 (1969). R. P. Feynman, Phys. Rev. Lett. **23**, 1415 (1969).
2. B. A. Gordon *et al.*, Phys. Rev. D **20**, 2645 (1979). J. deGroot *et al.*, Phys. Lett. **23**, 1415 (1979).
3. D. Bollini *et al.*, Phys. Lett. B **104**, 403 (1981).
4. C. K. Chen, Phys. Rev. D **27**, 2780 (1983).

CHIH KWAN CHEN
10/91 Lombard, Illinois

Editorial Information on a Particle Text

In his review of Otto Nachtmann's book *Elementary Particle Physics: Concepts and Phenomena* (April 1991, page 101), our colleague Francis Halzen compares it with our own *Gauge Theories in Particle Physics* as well as with texts by Donald Perkins and by Alan Martin and himself. We were surprised that Halzen referred to our first edition (published in 1982) rather than to our completely revised, enlarged and updated second edition (Adam Hilger, 1989; distributed in North America by AIP). In two particular respects, Halzen's remarks—while perfectly fair as regards our first edition—are definitely inapplicable to the second.

First, Halzen contrasts the field theoretic approach followed by Nachtmann with "the very phenome-

nological paths traveled" in the three other texts. We believe that our second edition offers precisely a novel and appealing "middle way" between the intuitive but (at crucial points) *ad hoc* procedures of the phenomenological approach and the rather daunting formalism of the full field theory treatment. In our low-level introduction to quantum field theory, we have judiciously controlled the spread of the formalism, using the field theory ideas to buttress the formerly weak points of the phenomenological approach. In our experience, this kind of treatment is very popular with beginning graduate students and with our experimental colleagues.

Second, Halzen refers to "the older texts, which were written before the weak intermediate bosons were discovered." A vital component of our 1989 edition is the *confrontation* between the predictions of the standard model and the dramatic experimental discoveries of the early 1980s, which so remarkably confirmed the theory. This goes for both weak interactions and quantum chromodynamics, the latter of which we treat in a wholly new chapter.

IAN J. R. AITCHISON
University of Oxford
Oxford, England

ANTHONY J. G. HEY
University of Southampton
Southampton, England

7/91

HALZEN REPLIES: I read and was indeed referring to the first edition. I apologize and stand corrected.

FRANCIS HALZEN
12/91 University of Wisconsin, Madison

Photo Flip Remark

There was no reason to invert the photo in Leo Kadanoff's Reference Frame column (March 1991, page 9) so that it could serve as a crude representation of a thermal plume. If the picture had been run right-side up, it could have been labeled a downwelling structure in a front between two eddies. Such structures are actually fairly common in all major oceanic current systems. The same technical points could have been made in the column with an accurate label and by using the mixed layer above the thermocline as the "boundary layer" discussed in the text.

JEROME B. CARR
Carr Research Laboratory Inc
Wellesley, Massachusetts ■

4/91