

INTERNATIONAL SCHOOL OF SUBNUCLEAR PHYSICS

XIII Course on: NEW PHENOMENA IN SUBNUCLEAR PHYSICS

ERICE - TRAPANI - SICILY: 11 JULY - 1 AUGUST 1975

Sponsored by the: • Italian Ministry of Public Education • Italian Ministry of Scientific and Technological Research • NATO • Regional Sicilian Government • Weizmann Institute of Science

LECTURERS AND PROGRAMME

OPENING LECTURE

- *Quarks from Paradox to Myth*,
K. G. WILSON, Cornell University, Ithaca, N.Y., U.S.A.

THEORETICAL LECTURES

- *Mass Spectra, Coupling Constants and other Intrinsic Properties of the Charmed Particles*,
L. MAIANI, Istituto Superiore di Sanità, Rome, Italy.
- *Quark Confinement*,
K. G. WILSON, Cornell University, Ithaca, N.Y., U.S.A.
- *Quark Confinement Schemes in Field Theory*,
S. D. DRELL, SLAC, Stanford, Calif., U.S.A.
- *Hadrodynamics with the Elusive Quark*,
G. PREPARATA, CERN, Geneva, Switzerland.
- *Recent Results from the Bag Model*,
V. F. WEISSKOPF, MIT, Cambridge, Mass., U.S.A.
- *Asymptotically Free Theories*,
D. GROSS, Princeton University, Princeton, N.J., U.S.A.
- *Gauge Theories*,
S. WEINBERG, MIT, Cambridge, Mass., U.S.A.
- *Recent Developments in Gauge Theories*,
G. 't HOOFT, Rijksuniversiteit Utrecht, Utrecht, The Netherlands.
- *Symmetry Breakdown in Model Field Theories*,
S. COLEMAN, Harvard University, Cambridge, Mass., U.S.A.
- *The Statistical Model of Hadron Collisions*,
S. FRAUTSCH, CALTECH, Pasadena, Calif., U.S.A.
- *The Phase and the Modulus of the Scattering Amplitudes*,
A. MARTIN, CERN, Geneva, Switzerland.

THEORETICAL SEMINARS

- *Weak non Leptonic Amplitudes in Unified Theories*,
G. ALTARELLI, University of Rome, Rome, Italy.
- *The non Leptonic Decays of Charmed Particles*,
N. CARIBBO, University of Rome, Rome, Italy.
- *Relationship Between Gauge Field Theories and Dual Resonance Models*,
P. H. FRAMPTON, Syracuse University, Syracuse, U.S.A.
- *Quark Confinement and Related Problems*,
C. REBBI, MIT, Cambridge, Mass., U.S.A.

SEMINARS ON SPECIALIZED TOPICS

- *Experimental Observation of the New Particles*:
• *Produced in Hadronic Interactions*,
S. C. C. TING, MIT, Cambridge, Mass., U.S.A.
- *Produced in (e^+e^-) Interactions at SPEAR*,
M. BREIDENBACH, SLAC, Stanford, Calif., U.S.A.
- *Produced in (e^+e^-) Interactions at ADONE*,
G. BARBIILLI, Laboratori Nazionali di Frascati, Italy.
- *Produced in (e^+e^-) Interactions at DORIS*,
B. WITK, DESY, Hamburg, Germany.
- *Produced in Weak Interactions*,
C. RUBBIA, CERN, Geneva, Switzerland.
- *Direct Muon Production*,
J. W. CRONIN, University of Chicago, Chicago, Illinois, U.S.A.
- *Scattering of Muons by Nucleons at 150 GeV*,
R. WILSON, Harvard University, Cambridge, Mass., U.S.A.
- *How Much of a Hadron is the Photon*,
C. A. HUSCH, University of California, Santa Cruz, Calif., U.S.A.
- *Neutron Dissociation at FERMI-LAB Energies*,
T. FINN, University of Rochester, Rochester, N.Y., U.S.A.
- *Present and Future of Heavy Ion Accelerators*,
M. WHITE, Princeton University, Princeton, N.J., U.S.A.

REVIEW LECTURES

- *A Review of the Production and Decay Properties of the New Particles*,
A. ZICHICH, CERN, Geneva, Switzerland.
- *A Survey of the Theoretical Models for the New Particles*,
G. MORRUCO, University of Genoa, Genoa, Italy.
- *Weak Interactions at High Energy*,
C. RUBBIA, CERN, Geneva, Switzerland.
- *Neutral Currents*,
B. BOHRH, CALTECH, Pasadena, Calif., U.S.A.
- *Theoretical Understanding of Neutral Currents*,
M. GOURIN, University of Paris VI, France.
- *Electromagnetic Interactions of Leptons and Hadrons*,
R. TAYLOR, SLAC, Stanford, Calif., U.S.A.
- *Current Questions in the Spectroscopy of Mesons and Baryons*,
R. H. DALITZ, University of Oxford, Oxford, U.K.
- *High Energy Hadronic Interactions*,
A. N. DIBONIS, CERN, Geneva, Switzerland.
- *Cosmic Rays of Top Energy*,
C. B. A. MCCUSKER, University of Sidney, Sidney, Australia.

ROUND TABLE DISCUSSIONS

- *The Quality of Life and Science*,
Chairman: I. I. RAB, Columbia University, New York, N.Y., U.S.A.
- *Introductory Speaker: A. ZICHICH, CERN, Geneva, Switzerland.*
- *New Adventures in International Collaboration: (e⁺e⁻) Physics*,
Chairman: On.le M. PERINI, Minister of Scientific and Technological Research, Rome, Italy.
- *Introductory Speakers:*
G. BERNARDINI, Scuola Normale Superiore, Pisa, Italy.
P. T. MAYHEW, Imperial College, London, U.K.
W. PAUL, University of Bonn, Germany.
C. VILLI, INFN, Rome, Italy.

HIGHLIGHTS IN OTHER FIELDS

- *Time Reversal and Interference Effects in Superconductors*,
L. COOPER, Brown University, Providence, R.I., U.S.A.
- *Fundamental Physics and Low Temperature Techniques*,
W. PATERSON, Stanford University, Stanford, Calif., U.S.A.
- *Beyond the End of Time*,
J. WHEELER, Princeton University, Princeton, N.J., U.S.A.

THE FUTURE OF HIGH ENERGY PHYSICS IN EUROPE

- *Status of the SPS*,
J. H. ADAMS, CERN, Geneva, Switzerland.
- *Possible Future Storage Rings at CERN: (pp) and (ep)*,
K. JOHNSON, CERN, Geneva, Switzerland.

THE GLORIOUS DAYS OF PHYSICS

- *My Life as a Physicist's Wife*,
LAURA FERMI

CLOSING LECTURE

- *New Pathways in Subnuclear Physics*,
V. F. WEISSKOPF, MIT, Cambridge, Mass., U.S.A.

PURPOSE OF THE SCHOOL

The school is devoted to those physicists who are interested in gaining a much deeper theoretical understanding of the field of physics in which they are working. The programme will emphasize the elucidation and discussion of the progress achieved in the theoretical and experimental understanding of particle physics during the last year. Students will be selected from the applicants according to their scientific qualifications. In this selection, the geographical distribution of the students will be taken into account.

To take full advantage of the material presented at the school, three lectures will be given in the morning and at least two hours of the afternoon will be dedicated to clearing up in free, informal discussions, the topics of the morning lectures. Seminars will be held in afternoon or evening sessions.

— SPECIAL SCHOLARSHIPS —

The following special Scholarships have been established in honour of, and named after, the late Physicists:

PATRICK M.S. BLACKETT AMOS DESHALLI ANDRÉ LAGARRIGUE JAMES CLADWICK GUNNAR KALLÉN GIULIO RACCHI

These Scholarships cover travel expenses, registration fees, and full board and lodging in Erice.

POETIC TOUCH

According to a legend, Erice, son of Venus, founded a small town on top of a mountain (290 metres above sea level) more than three thousand years ago. Homer (~1000 B.C.), Theocritus (~300 B.C.), Polybius (~200 B.C.), Virgil (~50 B.C.), Horace (~20 B.C.), and others, have celebrated this magnificent spot in Sicily in their Poems. Among the sights there, the Castle of Venus and the Cyclopean Walls can be admired. Other masterpieces of ancient Greek civilization, such as Motya, Segesta and Selinunte, are to be found in the neighbourhood. On the Aegadian Islands, which can be reached by cable car plus hydrofoil boat in about two hours, there are prehistoric murals in the famous grotto of Levanzo, the Grotte Marine of Marettimo, and the recently discovered paleolithic grottoes of Favignana. There are splendid beaches, the farthest about 40 minutes' drive from Erice, at San Vito Lo Capo, Scarpello, Corfinio, and wild beaches around Monte Cofano.

Please note:

- It is regretted that, owing to the limited number of places available in the lecture hall, it will not be possible to allow any person not selected by the Committee of the School, to follow the courses.
- NSF travel grants are restricted to U.S.A. citizens. Applications for these should be made as soon as possible through the Director of the School.

GENERAL INFORMATION

Persons wishing to attend the Course should write to the Secretary of the School:

- **MRS MARIA ZAINI** - International School of Subnuclear Physics
via Jenner, 48 - 40136 BOLOGNA, Italy.

They should specify:

- i) date and place of birth together with their present nationality;
- ii) degree and other academic qualifications;
- iii) list of publications;
- iv) present position and place of work;

and include:

- v) a letter of recommendation from their research group leader or from a professor of physics.

The subscription fee is 1500 Swiss francs. Thanks to the generosity of the sponsoring institutions, partial support can be given to some deserving students, who need financial help. This must be specified and justified in the application letter.

- **PLEASE NOTE** that the special Scholarships as well as any other form of financial support will be awarded in consultation with the Board of Lecturers at the end of the Course, in order to allow a more direct judgement of all the applicants.

Closing date for application: May 31, 1975

No special application-form is required

A letter will be sent to successful applicants by June 15. Students experiencing difficulties with travel documentation and needing to know before June 15 whether or not their applications have been accepted, may obtain an earlier special decision by submitting a justified request.

Admission to the School will be decided by a committee consisting of Professors: G. Bernardini, N. Cabibbo, F. H. Daloz, M. Gell-Mann, T. D. Lee, A. Martin, L. A. Radicati, N. F. Weisskopf and A. Zichich.

Students must be in Erice on July 11 not later than 5 p.m. Please note that the Calendar Holidays and the School Holidays are totally uncorrelated. More detailed information, including the timetable of the lectures, will be sent to successful applicants together with the letter of acceptance.