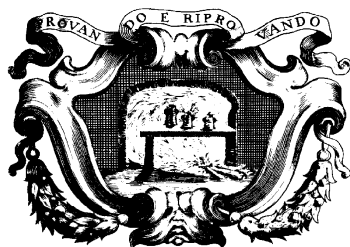


SOCIETÀ ITALIANA DI FISICA



INTERNATIONAL SCHOOL OF PHYSICS
“ENRICO FERMI”

with the sponsorship of

ISTITUTO NAZIONALE DI FISICA NUCLEARE
CAMERA DI COMMERCIO DI LECCO

SUMMER COURSES 2011

VILLA MONASTERO
VARENNA, LAKE COMO

COURSE CLXXIX
LASER-PLASMA ACCELERATION

20 – 25 June

Topics:

- Ultra-intense lasers.
- Laser-plasma interactions: basic principles and simulation.
- Applications of laser-plasma accelerations (FEL, synchrotron radiation, medical applications).
- Accelerator physics: basic principles on focusing and transport.
- Status and perspectives in new acceleration techniques (electrons).
- New electron acceleration techniques (theory).
- Perspectives in new acceleration techniques (ions).
- Laser-plasma diagnostics.
- Particle beams diagnostics and control.

Lecturers and Seminar Speakers:

- M. BORGHESI - Department of Physics and Astronomy, The Queen's University of Belfast (UK)
J. COLLIER - STFC Rutherford Appleton Laboratory, Harwell Science and Innovation Campus, Didcot (UK)
E. H. ESAREY - Accelerator and Fusion Research Division, Lawrence Berkeley National Laboratory, CA (USA)
A. ESPOSITO - INFN, Laboratori Nazionali di Frascati, Roma (Italy)
M. FERRARIO - INFN, Laboratori Nazionali di Frascati, Roma (Italy)
P. GIBBON - Jülich Supercomputing Centre, Institute for Advanced Simulation (Germany)
A. GIULIETTI - Istituto Nazionale di Ottica, CNR, Pisa (Italy)
D. JAROSZYNSKI - Physics Department, University of Strathclyde, Scottish Universities Physics Alliance (SUPA), Glasgow (UK)
G. KUBE - DESY and MDI, Hamburg (Germany)
W. LEEMANS - Accelerator and Fusion Research Division, Lawrence Berkeley National Laboratory, CA (USA)
G. RIBOULET - Amplitude Technologies, Evry (France)

Directors of the Course:

- F. FERRONI - Dipartimento di Fisica, Sapienza Università di Roma (Italy)
L. A. GIZZI - Istituto Nazionale di Ottica, CNR, Pisa (Italy)

Scientific Secretary:

- R. FACCINI - Dipartimento di Fisica, Sapienza Università di Roma (Italy)

Deadline for application: April 30th, 2011

Correspondence and application forms should be sent to:

R. FACCINI
Dipartimento di Fisica
Sapienza Università di Roma
Piazzale A. Moro 5
00185 ROMA (Italy)
Tel.: +39-06-49914798, Fax: +39-06-4957697
varena2011@roma1.infn.it

Opening of the Course: Monday, June 20, 2011 – 9.00 a.m.

Closing of the Course: Saturday, June 25, 2011 – 12.30 a.m.

Participation fee:

€900,00 (for attendance, full board, lodging and Proceedings)

COURSE CLXXX
THREE-DIMENSIONAL PARTONIC STRUCTURE OF THE NUCLEON

28 June – 8 July

Topics:

- Partonic distributions, fragmentation functions and factorization in QCD - Collinear case.
- Theory of Transverse Momentum Dependent partonic distributions (TMDs).
- Theory of Generalized Partonic Distributions (GPDs).
- Experimental methods in studies of hard scattering processes.
- Extraction of TMDs and GPDs from data.
- Analysis tools for azimuthal asymmetries.
- Models for TMDs and numerical methods.
- Future experiments.

Lecturers and Seminar Speakers:

- E. ASCHENAUER - Physics Department, Brookhaven National Laboratory, Upton, NY (USA)
A. BACCHETTA - Dipartimento di Fisica Nucleare e Teorica, Università di Pavia and INFN, Sezione di Pavia (Italy)
V. BURKERT - Jefferson Laboratory, Newport News, VA (USA)
M. DIEHL - Deutsches Elektronen-Synchrotron DESY, Hamburg (Germany)
H. GAO - Duke University, Durham, NC (USA)
M. GUIDAL - Institut de Physique Nucléaire, Orsay (France)
P. HAEGLER - Physik Department der TU München, Garching, (Germany)
S. KUHN - Old Dominion University, Norfolk, VA (USA)
G. MALLOT - CERN, Geneva (Switzerland)
P. MULDER - Department of Physics and Astronomy, Vrije Universiteit Amsterdam (The Netherlands)
B. PASQUINI - Dipartimento di Fisica Nucleare e Teorica, Università di Pavia and INFN, Sezione di Pavia (Italy)
A. PROKUDIN - Jefferson Laboratory, Newport News, VA (USA)
A. ROSTOMYAN - Deutsches Elektronen-Synchrotron DESY, Hamburg (Germany)
M. STRATMANN - Physics Department, Brookhaven National Laboratory, Upton, NY (USA)
M. VANDERHAEGEN - Institut für Kernphysik, Johannes Gutenberg-Universität, Mainz (Germany)

Directors of the Course:

- M. ANSELMINO - Dipartimento di Fisica Teorica, Università di Torino and INFN, Sezione di Torino (Italy)
H. AVAKIAN - Jefferson Laboratory, Newport News, VA (USA)

Scientific Secretaries:

- D. HASCH - INFN, Laboratori Nazionali di Frascati, Roma (Italy)
P. SCHWEITZER - Department of Physics, University of Connecticut, Storrs, CT (USA)

Deadline for application: May 5th, 2011

Correspondence and application forms should be sent to:

D. HASCH
INFN, Laboratori Nazionali di Frascati
Via E. Fermi 40, 00044 FRASCATI, RM (Italy)
Tel.: +39-06-94032310, Fax: +39-06-94032559
delia.hasch@lnf.infn.it

Opening of the Course: Tuesday, June 28, 2011 – 9.00 a.m.

Closing of the Course: Friday, July 8, 2011 – 12.30 a.m.

Participation fee:

€1.300,00 (for attendance, full board, lodging and Proceedings)

COURSE CLXXXI
MICROSCOPY APPLIED TO BIOPHOTONICS

12 – 22 July

Topics:

- Introduction to the principles of microscopy and biophotonics.
- Fluorescence labels.
- Conventional and advanced microscopy techniques.
- In vivo microscopy.
- Intravital microscopy and tomography.
- Endoscopy.
- Physiological imaging.
- Translation from laboratory to clinic.
- Optical manipulation.
- New laser sources for microscopy.

Lecturers and Seminar Speakers:

- S. ANDERSSON-ENGELS - Department of Physics, Lund University Medical Laser Centre (Sweden)
H.-U. DODT - Department of Bioelectronics, Institute of Solid State Electronics, Wien (Austria)
C. DUNSBY - Photonics Group, Physics Department, Imperial College London (UK)
H. GERRITSEN - Utrecht University, Debye Institute, Molecular BioPhysics, Ornstein Laboratory (The Netherlands)
E. GRATTON - Laboratory for Fluorescence Dynamics, University of California, Irvine Biomedical Engineering Department, CA (USA)
S. HELL - Max-Planck-Institut für Biophysikalische Chemie, Abteilung NanoBiophotonik, Göttingen (Germany)
K. KOENING - JenLab GmbH, Saarbrücken (Germany)
W. LANGBEIN - School of Physics and Astronomy, Queens Buildings, Cardiff (UK)
J. MERTZ - Boston University, Department of BME, MA (USA)
J. POPP - Institut für Photonische Technologien, Jena (Germany)
C. SHEPPARD - Optical Bioimaging Laboratory, Division of Bioengineering, National University of Singapore (Singapore)
G. J. TEARNEY - Massachusetts General Hospital, Boston, MA (USA)
V. TUCHIN - Research-Educational Institute of Optics and Biophotonics, Saratov State University (Russia)
S. VOGEL - National Institute on Alcohol Abuse and Alcoholism, National Institutes of Health, Bethesda, MD (USA)

Directors of the Course:

- F. S. PAVONE - LENS and Dipartimento di Fisica, Università di Firenze, Sesto Fiorentino, Firenze (Italy)
P. T. C. SO - Department of Mechanical and Biological Engineering, MIT, Cambridge, MA (USA)
P. M. W. FRENCH - Photonics Group, Physics Department, Imperial College London (UK)

Scientific Secretary:

- D. SELISCA - LENS and Dipartimento di Fisica, Università di Firenze, Sesto Fiorentino, Firenze (Italy)

Deadline for application: May 14th, 2011

Correspondence and application forms should be sent to:

D. SELISCA
LENS and Dipartimento di Fisica, Università di Firenze
Via N. Carrara 1, 50019 SESTO FIORENTINO, FI (Italy)
Tel.: +39-055-4572479, Fax: +39-055-4572520
dansel@lens.unifi.it

Opening of the Course: Tuesday, July 12, 2011 – 9.00 a.m.

Closing of the Course: Friday, July 22, 2011 – 12.30 a.m.

Participation fee:

€1.300,00 (for attendance, full board, lodging and Proceedings)

COURSE CLXXXII
NEUTRINO PHYSICS AND ASTROPHYSICS

26 July – 5 August

in collaboration with the International School on AstroParticle Physics (ISAPP)

Topics:

- An outline of the standard model of elementary particles (for astrophysicists).
- An outline of cosmology (for elementary particle physicists).
- Neutrino properties (Dirac and Majorana neutrino; neutrino mixing; phenomenology of neutrino oscillations).
- Models on neutrino mass. Non standard interactions.
- Neutrinos and cosmology.
- Neutrinos and the stars.
- Methods and problems in low energy neutrino experiments (solar, reactors, geo-).
- Methods and problems in experiments with neutrino beam (short and long baseline).
- Methods and problems in neutrino observatories (under ice, under water).
- Technology in future experiments.
- U.H.E. neutrinos.
- $\beta\beta$ decay.
- Direct measurement of the neutrino mass.

Lecturers and Seminar Speakers:

- E. FIORINI - Dipartimento di Fisica “G. Occhialini”, Università di Milano-Bicocca (Italy)
F. GATTI - Dipartimento di Fisica, Università di Genova (Italy)
B. KAYSER - Fermilab, Batavia, IL (USA)
D. MAINO - Dipartimento di Fisica, Università di Milano (Italy)
A. MASIERO - Dipartimento di Fisica “G. Galilei”, Università di Padova (Italy)
L. OBERAUER - Physik-Department, Technische Universität München, Garching (Germany)
S. PASTOR - IFIC, Instituto de Física Corpuscular, Edificio Institutos de Investigación, Valencia (Spain)
C. PENA GARAY - Instituto de Física Corpuscular, Valencia (Spain)
G. RAFFELT - Max-Planck-Institut für Physik, Werner-Heisenberg-Institut, München (Germany)
G. RANUCCI - INFN, Sezione di Milano (Italy)
M. RIBORDY - Laboratory for High Energy Physics EPFL-SB-IPEP-LPHE, BSP, Cubotron, Lausanne (Switzerland)
G. SIGL - II. Institut für Theoretische Physik, Universität Hamburg (Germany)
M. THOMSON - Department of Physics, Cavendish Laboratory, Rutherford Building, Cambridge (UK)

Director of the Course:

- G. BELLINI - Dipartimento di Fisica, Università di Milano (Italy)

Scientific Secretary:

- L. LUDHOVA - INFN, Sezione di Milano (Italy)

Deadline for application: May 31st, 2011

Correspondence and application forms should be sent to:

L. LUDHOVA
Dipartimento di Fisica, Università di Milano
Via Celoria 16, 20133 MILANO (Italy)
Tel.: +39-02-50317394, Fax: +39-02-50317617
isapp2011@mi.infn.it

Opening of the Course: Tuesday, July 26, 2011 – 9.00 a.m.

Closing of the Course: Friday, August 5, 2011 – 12.30 a.m.

Participation fee (ISAPP-SIF):

€1.000,00 (for attendance, full board, lodging and Proceedings)

GENERAL INFORMATION

- A) – In addition to the official lectures, some seminars on related subjects will be held by visiting scientists¹.
- B) – The scientific organization and direction of the Course are entrusted to the Directors.
- C) – The number of students at each Course is limited to about 60. Students are requested to attend all lectures and seminars.
- D) – Whoever may be interested in attending the Course and is not entitled - for his age or other reasons - to be considered a student, may follow the Course as observer. *Registration fee charged to observers is €500,00*². Observers should provide for their board and lodging; if required, the School may take care of their hotel accommodation.
- E) – Applicants will be informed of the decision on their admittance within 30 days from the beginning of each Course³.
- F) – 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.
- G) – Students are requested to arrive at Varenna the day preceding the opening of the Course, *i.e. respectively on Sunday, June 19th (1st Course), Monday, June 27th (2nd Course), Monday, July 11th (3rd Course), Monday, July 25th (4th Course)*. Accommodation for the students will be provided in rooms with 2 beds in hotels at Varenna. Meals will be served at the hotels.
- H) – Fees should be paid by students and observers *following the instruction and within the date indicated in the letter of admittance*.
- I) – Scholarships may be granted to deserving students who need financial help. Such requests must be specified in the application and justified in the recommendation letter⁴. Scholarships will be assigned by the President of the Italian Physical Society.
- J) – Students should avoid being accompanied by relatives. In view of the holiday season local accommodation is very limited. Quite exceptionally the School could see to the accommodation of members of students' families in local hotels. Hotel expenditure for students' relatives will be payable separately and directly to the hotel management.

The President
Società Italiana di Fisica
LUISA CIFARELLI

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40123 BOLOGNA, Italy
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¹For COURSE CLXXXII the seminars will be decided later.

²For COURSE CLXXXII observers will be charged €200,00 as registration fee.

³For COURSE CLXXXII the list of accepted students will be posted on the School website just after the payment of the registration fee, since priority will be assigned according to the registration date.

⁴For COURSE CLXXXII a CV of the applicant with the list of publications is needed instead of the recommendation letter, together with the e-mail address of a scientist to whom we can ask information about the applicant.