

ICTP – [The Abdus Salam International Centre for Theoretical Physics](#), Trieste, Italy

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BULLETIN No. 2 SMR. 1302 (December 2000)

WINTER SCHOOL ON LASER SPECTROSCOPY AND APPLICATIONS

(19 February - 2 March 2001)

Miramare - Trieste, Italy

The Abdus Salam International Centre for Theoretical Physics (ICTP), in collaboration with the Optical Society of America (OSA), will organize a Winter School on Laser Spectroscopy and Applications, to take place from 19 February to 2 March 2001. This Second Bulletin contains preliminary information and the programme.

DIRECTORS

Prof. W. Demtröder (Universität Kaiserslautern, Germany)

Prof. M. Inguscio (Università di Firenze, Italy).

LOCAL ORGANIZER

Prof. G. Denardo (ICTP University of Trieste)

PURPOSE AND NATURE

The School will introduce scientists to basic modern spectroscopy, through a programme of lectures by international experts, group discussions and laboratory demonstrations. The aim is to provide the background needed to follow the most advanced literature.

MAIN TOPICS

Basic instrumentation of modern spectroscopy

Spectrometers, interferometers, detectors, lambdameters

Sensitive techniques in absorption- and emission- spectroscopy

Modulation techniques, opto-acoustic and optothermal spectroscopy
cavity-ringdown-spectroscopy, laser-induced fluorescence, REMPI,
applications

Special techniques for Doppler-free spectroscopy

Saturation- and polarisation spectroscopy, two-photon-spectroscopy,
optical double-resonance techniques spectroscopy in collimated
molecular beams, applications

Time-resolved spectroscopy

Nano-, pico- and femtosecond lasers, detection of short pulses,
applications

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Some recent developments in laser spectroscopy

Optical cooling, BEC, atomic interferometers, atomic lasers, possible applications

Applications of spectroscopy in chemistry, biology and medicine

NMR, ESR, tomography, photodynamic therapy, CARS

Applications in environmental studies

Infrared laser-spectroscopy, LIDAR, femtosecond-terawatt lasers

VUV, soft x-ray and photo-electron spectroscopy

Auger effect, XPS, ESCA, EXAFS

The School is organized in collaboration with ICS-UNIDO for the part relevant to instrumentation and computing for spectroscopy.

PRELIMINARY PROGRAMME

FIRST WEEK (19 - 23 FEBRUARY)

W. DENTROEDER (Univ. Kaiserslautern, Germany)

"Modern spectroscopy and instrumentation"

E. TIEMANN (Univ. Hannover, Germany)

"Molecular spectroscopy and matter waves"

E. RIEDLE (Ludwig-Maximilians-Univ., Munich, Germany)

"Ultrashort pulses"

A. BAIG (Quaid-i-Azam Univ., Islamabad, Pakistan)

"Laser optogalvanic spectroscopy"

C. IZMAILOV (Institute of Photoelectronics, Baku, Azerbaijan)

"Subdoppler laser spectroscopy"

SECOND WEEK (26 February - 2 March)

M. INGUSCIO (L.E.N.S., Univ. di Firenze, Italy)

"High resolution spectroscopy and laser cooling"

P. DE NATALE (Istituto Nazionale di Ottica Applicata, Firenze, Italy)

"Non linear optics for spectroscopy"

V. BAGNATO (Univ. de Sao Paulo, IFSC, Sao Carlos, Brazil)

"Spectroscopy of colliding cold atoms"

M. COCKETT (Univ. of York, U.K.)

"Photoelectron spectroscopy and zero kinetic energy spectroscopy"

(to be confirmed)

The LAMP (Laser, Atomic and Molecular Physics) programme will

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include group discussions and internal seminars by participants. Those who intend to deliver a seminar are expected to come to the ICTP prepared with all the material needed for their talk (20 minutes).

In addition to the lectures programme and the LAMP seminars, special sessions are organized in the afternoons on exercises and topical discussions.

Senior participants and/or lecturers will discuss problems dealing with quantitative figures for spectroscopic instrumentation, estimation of spectral linewidths and calculations of achievable sensitivities for the different laser spectroscopy techniques. Some of these problems will require use of computers.

Participants will be invited to discuss issues and topics which were only shortly covered in the lectures.

The exercises aim at providing more quantitative knowledge about the subjects presented in the lectures, such as spectral resolving powers of different instruments, detectivity of detectors, frequency doubling efficiency, etc.

Participants should learn how to approach some problems of spectroscopy and how to solve them.

Participants who wish to compete for the ICTP-ICO award are invited to provide the School secretariat with additional documents upon arrival, which can be helpful to the Selection Committee. Please refer to the enclosed announcement.

The Abdus Salam International Centre for Theoretical Physics,
Trieste, Italy

and

International Commission for Optics (ICO)

The ICO/ICTP Award for Young Researchers from Developing Countries: Adopted by the ICO Bureau on August 6, 1999 and Approved by the ICTP in August 1999.

The ICO, the International Commission for Optics and the ICTP, the Abdus Salam International Centre for Theoretical Physics, Trieste, have agreed to establish a joint prize called the ICO/ICTP Award. It is reserved for young researchers from developing countries, who conduct their research in a developing country.

The Award will be given to scientists less than 40 years old who are actively doing research in Optics and have contributed to the promotion of research activities in Optics in their own or another developing country.

The Award consists of the following:
1) the ICO gives a cash amount (*) and a diploma;
2) the ICTP invites the winner to attend a three-week College in Trieste at the next appropriate opportunity and to give a seminar on his/her work when appropriate. The ICTP will pay for travel and living expenses.

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The Award will be delivered to the winner in Trieste in the presence of representatives of the ICO and the ICTP.

The Award is given to one person every year. The winner is selected on the basis of nominations received by the Award Committee in response to a call published by both the ICO and the ICTP. The Award Committee consists of four members, of which two are appointed by the ICO and two by the ICTP for a period of three years. Among the four members, the ICO appoints the Committee Chair.

The nominations must be documented by a complete curriculum vitae including a list of publications and selected reprints (no more than three) as well as a complete employment history and a description of the nominee's achievements for the promotion of research activity in developing countries.

* For 1999-2002, the amount of US\$ 1,000.

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