International Centre for Theoretical Physics

News from ICTP

No. 18/19
January/February 1989

Statement by President of Venezuela

On the occasion of his inauguration, President Carlos Andrés Perez who was at the ICTP on 9 November 1988, made the following statement:

"The malnutrition, health and cultural problems of our children will turn, with time, into serious social scars and degradation which will be difficult to remedy, unless we approach these problems with determination.

"We cannot wait any longer to face the challenges of today. I am deeply convinced that one of the keys necessary for being up-to-date at the end of the second millennium stems from a self-sustained technological and scientific development, for which we missed important opportunities in the past. *I offer to make, from now on, science and technology a governmental matter with highest national and social priority.*"

Newly-established High-Tc Superconductivity Laboratory

Four physicists have joined the high-temperature conductivity laboratory of the ICTP, i.e. C. Infante (Chile), L. Morales de la Garza (Mexico), M. Nevřiva (Czechoslovakia) and P. Ganguly (India). As the readers will recall, the high-temperature superconductivity laboratory was set up in the Adriatico Guest House in 1987 in support of the workshop on the same subject by Prof. F. Matacotta from the Institute for the Technology for Materials of the Consiglio Nazionale delle Ricerche (CNR) in Milan and who is now the organizer of the research programmes of the new laboratory.

Prof. C. Infante studied at the Catholic University of Chile where he received his B.Sc. in 1967. After serving as a lecturer at the same University, Dr. Infante went to St. Catherine College in Oxford where he earned his Ph.D. in physics in 1975. He was the Head of Physics and Applied Sciences at the Chilean Nuclear Energy Commission from 1976 to 1981 and has been a lecturer at the Department of Physics at the University of Chile from 1977 until now. At the ICTP, Dr. Infante will study structural and microstructural related properties in high-T_c superconductors.

Prof. Morales de la Garza studied at the Universidad Nacional Autónoma de Mexico where he received his B.Sc. in physics in 1975. He then went to the University of Cambridge from 1978 to 1982 where he obtained his Ph.D. in physics. He also worked at the Syracuse University (USA) as a post-doctoral fellow from 1984 to 1985. Before joining the ICTP, he was at the Institute of Physics of the Universidad Nacional Autónoma de Mexico in San Ysidro (California, USA). While at the ICTP, he will study composites of Bi.

Prof. Milos Nevřiva will work on the growth of crystals and on their characterization. Dr. Nevřiva, from the Institute of Physics of the Czechoslovak Academy of Sciences (Prague) earned his Ph.D. in 1985. He has worked in the Institute of Physics, Department of Magnetism, since 1969. He is a specialist in the growth of films and crystals of garnets and in the preparation, characterization and phase diagram determination of Y-Ba-Cu-O high temperature superconductors.

Prof. P. Ganguly (India) will study new superconducting systems. Two more scientists are expected to join the laboratory very soon.

In addition to equipment already in the laboratory, the laboratory has acquired equipment for low-temperature characterization (electrical resistivity, thermal conductivity, thermopower, AC susceptibility and critical currents), for the preparation of superconducting samples.

For chemical characterization, equipment for thermal analysis for Fourrier transform infrared spectroscopy and for metallography has been received on loan.

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Prof. N.K. Pak Appointed Advisor

We have learned that Prof. Namik K. Pak of Middle East Technical

University, Ankara, Turkey, a long-time Associate Member of the ICTP, has been appointed as the Science and Technology Advisor to the Turkish Government in January 1989.

Among other local tasks like the Scientific and Technical Research Council, he is in charge of the coordination of the international relations in the field of Science and Technology.

Activities at ICTP January/February 1989

Title: FOURTH INTERNATIONAL WORKSHOP ON COMPUTATIONAL CONDENSED MATTER PHYSICS: "TOTAL ENERGY AND FORCE METHODS" (4 - 6 January 1989).

Organizers: Professors A. Baldereschi (University of Trieste, Italy, and EPF, Lausanne, Switzerland), A.J. Williams (IBM, Yorktown Heights, USA), M. Scheffler (Fritz-Haber-Institut der MPG, Berlin, F.R. Germany) and W. Andreoni-Kay (IBM, Zürich, Switzerland), with the co-sponsorship of the International School for Advanced Studies (ISAS-SISSA, Trieste, Italy), the Department of Theoretical Physics of the University of Trieste, and the Italian national Research Council (CNR, Rome).

Lectures: Density functional calculation of the parameters in the Anderson impurity model. Calculations of electronic energies and interactions in CuO materials. Variational quantum Monte Carlo calculation of materials properties. Ab-initio correlation calculations for different solids with the local Ansatz. Recent progress in pseudo-Hamiltonians for quantum Monte Carlo. The metal-insulator transition in density-functional theory and quasiparticle theory. The self-energy approach for calculations of quasiparticle energies. Methods for ab-initio simulation. First-principles molecular dynamics of amorphous and liquid carbon. Hydrogen diffusion in semiconductors. Energy surfaces and structure of group VI elemental and compound clusters. Atomic and electronic structure of planar defects; semi-empirical and first-principles tight-binding methods. Full-potential LMTO; lattice dynamics of copper halides and perovskites. New LMTO techniques; accurate results for phase stabilities, phonon frequencies, and Grüneisen parameters. Dipoles and Schottky barrier heights of (111) $NiSi_2$/Si interfaces. The effective medium theory. A new classical potential for accurate total-energy calculations of atomic processes in Si. Linear response in real materials: Why is it useful? Why is it convenient? Non-adiabatic effects in molecular dynamics (classical and quantum). Studies of spin and orbital magnetism in bands. Relativistic quantum mechanics in condensed matter physics. Ferro- and antiferro-magnetism of 3d-overlayers on metals. Self-consistent antiferromagnetic ground state for La_2CuO_4 via energy and theory. Drugs from ab-initio calculations. An iterative scheme for obtaining eigenvectors of large real-symmetric matrices. Fast diagonalization of non-local pseudopotential Hamiltonians. A new formulation for ab-initio calculation of phonon spectra. Surface atom energetics. Defect metastability: The EL2 defect in GaAs.

The Workshop was attended by 115 lecturers and participants (19 from developing countries).

Title: WORKSHOP ON THEORETICAL FLUID MECHANICS AND APPLICATIONS (9 - 27 January 1989).

Organizers: Professors C. Bardos (Université de Paris IX, France), H. Beirão da Veiga (Università di Pisa, Italy), A.R. Bestman (University of Port Harcourt, Nigeria) and P.G. Drazin (University of Bristol, UK).

Lectures: Internal gravity waves. Existence results for the Euler and Navier-Stokes equations for non-homogeneous and compressible fluids. Mathematical theory of shock waves. Incompressible Euler equations, particle trajectories and related questions. Boundary-layer flows. Approximate inertial manifolds for Navier-Stokes equations. Fluid statics. Introduction to mathematical and numerical modelling in combustion. Can we predict weather? Triple-deck theory. Other interactive flows. Supersonic propeller acoustics. Flow in porous media – The governing equations. On thermal and rotational stability. Discrete Boltzmann equation and lattice–gas models in 1D flows. Flow of a viscous fluid driven along a channel by suction at porous walls. Burger's equation in the quarter plane: A formula for the weak limit. Rayleigh–Bénard convection in a porous box. Minimal surfaces. Convection during the solidification of a binary melt. Centrifugal instability: The Tayler–Dean problem. Homogenization of fluid flow through porous media. An introduction to bifurcation in fluid mechanics. Numerical bifurcation theory. Physiological flow as a branch of fluid mechanics. Convection. Hydrodynamic interaction between particles at low Reynolds numbers. Turbulent heating of the solar corona. On the boundary layer of a stagnation point reacting flow. Geometric optics approximation and hyperbolic problems. Hydromagnetic–gravity waves. No slip images in Stokes' flow. MHD power generating equations. Hydrodynamics of thin–film formation. Free Lagrangian method for @–D compressible flows. Computation of steep unsteady surface waves. Analytic solutions of Vlasov equation. Soil compaction model and its applications. An inverse problem for a nonlinear porous medium equation. Stability for incompressible fluids. Shock waves: Viscosity vs. capillarity. The dynamics of the near field strong jets in cross flows. Numerical simulation of tidal wave propagation. Convergence criteria and Navier-Stokes equations. Weak nonlinear instability of two immiscible liquids with different viscosities in a pipe. On some characteristics of hurricane inner core region inferred from laboratory simulations. Gaseous diffusion in leaf interiors. Asymptotic analysis of the temperature field of a micropolar fluid with blowing and suction. Solitonic solutions for generalized Boltzmann equations. Viscous dissipation flow between coaxial cylinders. The applications of fluid mechanics.

The Workshop was attended by 89 lecturers and participants (63 from developing countries).

Title: COURSE ON BASIC TELECOMMUNICATIONS SCIENCE (9 January - 3 February 1989).

Organizer: Professor J. Van Bladel (International Union of Radio Science, URSI), with the co-sponsorship of the International Union of Radio Science.

Lectures: Response of linear systems. Fourier integral. Use of PC. Frequency response of linear systems. Impulse response. Systems 1: Telecommunication systems, ISDN. DFT and FFT. Noise and probability. Baseband pulse transmission. Systems 2: Transmission media, guided waves. Analogue modulation. Analogue modulation of carriers. Angle modulation. Systems 3: Transmission media, radio. Frequency modulation. Bandpass signals and noise. Probability distributions. Systems 4: Radio system path loss. Random numbers probability. Digital modulation of carriers. Detection of digital modulation. Information theory and Shannon. Noise and simulation. Error rates with digital modulation. Error rates; Mary systems Systems 5: Broadcasting. ITU, CCIR, CCITT, EBU, ABU. Coding. Detection of coded signals. Systems 6: Case study. Radio relay design study. Detection of coded signals, equalisation. Spread spectrum techniques, DS. Satellite system design study. Spread spectrum systems. Encryption. Maxwell equations. Formulation of a typical integral equation – demonstration on PC. Far field. Scattering cross-section. Elements of relativity; Doppler effect. Transmission lines. Basic equations. Smith chart; Exercise on matching; Solution of problems by finite differences. Field expansion in waveguides. Introduction to optical electronics. Transmission characteristics of optical fibres. Variational procedures; solution of problems by finite elements methods. Optical fibres. Emitting diodes. Experiment based on an acoustic waveguide. Detectors, special optical fibres, sensors. Optoelectronics. Far field of a source; multiple expansion; linear antennas; the radar equation. Green's functions an dyadics. Wave propagation in a rainy environment. Rainfall data. Rain induced attenuation. Propagation effects in the clear atmosphere. Elements of ionospheric propagation. Introduction to satellite communication. Satellite systems. Applications. Communications techniques. Economic considerations. Earth observation system: Technical introduction; Characterization of remote sensing physics; instruments for earth observation; data dissemination. Future scenarios.

The Course was attended by 80 lecturers and participants (71 from developing countries).

Title: COLLEGE ON ATOMIC AND MOLECULAR PHYSICS: PHOTON ASSISTED COLLISIONS IN ATOMS AND MOLECULES (30 January - 24 February 1989).

Organizers: Professors B. Bederson (New York University, USA), K.L. Kompa (Max-Planck-Institut, Munich, Federal Republic of Germany) and N. Rahman (University of Trieste, Italy), with the co-sponsorship of the Italian Direzione Generale per la Cooperazione allo Sviluppo (Ministry for Foreign Affairs, Rome, Italy).

Lectures: Electron-atom collisions. Interatomic potentials and collisions with molecular beams. Molecular interactions from scattering experiments. high resolution laser spectroscopy. Electron-atom collisions with and without fields. Photochemistry. Rydberg atoms with matter radiation. Atomic physics with synchrotron and laser. Reaction dynamics with laser. Gas phase reactions with lasers. Energy pooling reaction. Theory and experiments of electron collisions in laser fields. Collision-induced coherence. Molecules in laser fields. Experimental aspects of L.I.C.E.T. Molecular dynamics. Simulated recombination as a stochastic process. Cathodoluminescence in biology and medicine. Bond formation at ultracold temperature. Laser-control of chemical reactions.

The College was attended by 88 lecturers and participants (62 from developing countries).

Title: COLLEGE ON THEORETICAL AND EXPERIMENTAL RADIO-PROPAGATION PHYSICS (6 - 24 February 1989).

Organizers: Professors F. Mariani (II University of Rome, Italy) and S. Radicella (PRONARP, Argentina), with the co-sponsorship of the Italian Direzione Generale per la Cooperazione allo Sviluppo (Ministry for Foreign Affairs, Rome, Italy).

Lectures: Research objectives of the Tethered satellites. Upper ionosphere and magnetospheric-ionospheric coupling. Ionospheric vertical soundings. ICS and ICTO new activities related to the topics of this college. The middle atmosphere. IRI and its use for radiopropagation. Statistical analysis of ionospheric parameters including correlation studies with other geophysical and solar data. Ionospheric physic in relation to radiopropagation. Low latitude atmosphere phenomena. Faraday rotation measurements. The importance of the ionosphere in modern satellite communications. Raypaths in the ionosphere. Magnetoionic theory. Raytracing. Low latitudes problems in ionospheric communications. Ionospheric absorption techniques and results. Oblique and backscatter sounding. Propagation and system performance predictions at HF. Radiopropagation knowledge for design of high reliability HF links. Atmospheric refractive index. Procedure for calculating electron density profiles from vertical incidence sounding I ionograms. Field strength estimation of abnormal long distance VHF and upper HF bands propagation via sporadic-E. Precipitation and atmospheric gases. Problems of expert system in ionospheric informatics. Measurements techniques of tropospheric radiopropagation parameters. Some aspects of radiowave propagation in the troposphere. Radio noise theory and measurement. Space orchestra: Radio sounds from space. Spectrum management.

The College was attended by 87 lecturers and participants (68 from developing countries).

Statistical Data on ICTP Activities in 1988

The following tables deal with all activities combined, therefore they show the *actual* number of visitors, i.e. those scientists who participated in more than one activity are counted only once.

Summary of participation 1988 vs. 1987

	Visitors		Man/Months		Total		Percentage (Dev. vs. total)	
	Dev.	Ind.	Dev.	Ind.	Visitors	M/M	Visitors	M/M
1988	2220	1894	3729.47	867.18	4114	4596.65	53.96%	81.13%
1987	2171	1529	3247.27	652.01	3700	3899.28	58.68%	83.28%
Increase	2.26%	3.87%	14.87%	33.00%	11.19%	17.88%		
The above figures for 1988 include:								
Training in Italian laboratories								
	170	-	1093.76	-	170	1093.76	100.00%	100.00%
The above figures for 1987 include:								
Workshop on microcomputers (Khartoum, Sudan)								
	24	3	7.92	0.99	27	8.91	88.89%	88.89%
Workshop on fabrication of low cost laboratory equipment (Dar-es-Salaam, Tanzania)								
	37	-	36.63	-	37	36.63	100.00%	100.00%
Workshop on the applicability of environmental physics and mathematics (Addis Ababa, Ethiopia)								
	60	8	21.60	2.88	68	24.48	88.24%	88.24%
Training in Italian laboratories								
	108	-	730.10	-	108	730.10	100.00%	100.00%

Participation by geographical areas in the research and training-for-research activities in the research and training-for-research activities of the ICTP in 1988

Geographical Areas	Visitors		Man/months		Total for Area	
	Dev.	Ind.	Dev.	Ind.	Visitors	Man/Months
Africa	373	-	614.35	-	373	614.35
Asia	909	93	1839.32	56.69	1002	1896.01
Europe	446	1381	487.26	638.75	1827	1126.01
Indonesia and Oceania	10	12	12.89	26.32	22	39.21
North and Central America	124	331	186.98	125.81	455	312.79
South America	358	-	588.67	-	358	588.67
International Organizations	-	77	-	19.61	77	19.61
TOTAL	**2220**	**1894**	**3729.47**	**867.18**	**4114**	**4596.65**
% Developing vs. Total					**53.96%**	**81.13%**

Breakdown of the number of scientists who worked at the ICTP in 1988 and of man/months per scientific field

Other tables show that the total number of scientists who came to the ICTP is 4114 while the total number of man/months is 4596.65. In the tables which follow the number of scientists will be higher since several of them took part in more than one activity.

Table I shows a summary of the breakdown while Table III shows the details. Percentages refer to the total participation in the field vs. the grand total.

Table I
Summarized breakdown by field of activity

Activity	Number of Visitors				Number of Man/months			
	Dev.	Ind.	Total	%	Dev.	Ind.	Total	%
1. Fundamental Physics	332	333	665	14.18%	416.79	241.59	658.38	14.32%
2. Condensed Matter	592	506	1098	23.41%	712.49	173.37	885.86	19.27%
3. Mathematics	563	309	872	18.59%	596.29	165.86	762.15	16.58%
4. Physics & Energy	65	25	90	1.92%	68.69	10.48	79.17	17.2%
5. Physics & Environment	252	141	393	8.38%	239.73	91.49	331.22	7.21%
6. Living State	202	92	294	6.27%	199.04	37.59	236.63	5.15%
7. Applied Physics	235	73	308	6.57%	217.07	32.92	249.99	5.44%
8. Adriatico Conferences	94	518	612	13.05%	19.32	91.33	110.65	2.41%
9. Other research	146	43	189	4.03%	166.29	22.55	188.84	4.11%
TOTAL	2481	2040	4521	96.38%	2635.71	867.18	3502.89	76.21%
Outside activities								
Italian laboratories	170	-	170	3.62%	1093.76	-	1093.76	23.79%
GRAND TOTAL	2651	2040	4691		3729.47	867.18	4596.65	

Hosted activities

1. From Protein Structure to Protein Engineering.
2. Large Scale Structure and Motions of the Universe.
3. The First Edward Bouchet International conference on Physics and Technology.
4. Meeting to Address the Problem of Effective North-South Collaboration in Research and Education in Physics and Mathematics.
5. Role of Women in the Development of Science and Technology in the Third World.
6. Workshop on Increasing Flow of Scientific Literature to Third World Institutions.
7. Inventory of Scientific Institutions in the Third World.

* In addition, the Centre supported 104 regional courses, workshops and conferences in all regions of the world.

Table II shows a statistical summary of the activities at the ICTP itself and outside its premises.

Table II
Statistical summary on activities held at and outside the ICTP

Figures on research include long- and short-term scientists as well as Associate Members, some scientists from Federated Institutes and seminar lecturers.

The sponsored activities held abroad are not included.

Activity	Number of Visitors			Number of Man/months		
	Dev.	Ind.	Total	Dev.	Ind.	Total
1. At the ICTP:						
(a) Research:						
Fundamental Physics	94	71	165	215.92	136.34	352.26
Condensed Matter	63	26	89	146.37	6.19	152.56
Mathematics	64	9	73	205.48	12.66	218.14
Microprocessors Lab	12	1	13	68.03	1.05	69.08
Other	146	43	189	166.29	22.55	188.84
Total	379	150	529	802.09	178.79	980.88
% Total vs. Grand Total	8.08%	3.20%	11.28%	17.45%	3.89%	21.34%
(b) Training for research (courses, workshops and conferences)						
Total	2102	1890	3992	1833.62	688.39	2522.01
% Total vs. Grand Total	44.81%	40.29%	85.10%	39.89%	14.98%	54.87%
2. Outside activities:						
Italian laboratories	170	-	170	1093.76	-	1093.76
% Total vs. Grand Total			3.62%			23.79%
GRAND TOTAL	**2651**	**2040**	**4691**	**3729.47**	**867.18**	**4596.65**

Long-term Scientists Present at ICTP in 1989

Name	*Institute of origin*	*Period of stay at ICTP*	*Research topic at ICTP*
Anini Y.I.	Birzeit University, West Bank	1 Jan - Nov 89	Quantum cosmology.
Birmingham D.	Trinity College, Dublin, Ireland	1 Jan - 30 Sept 89	Topological quantum field theory.
Boudh-hir M.E.		1 Jan - 30 Jun 89	Statistichal mechanics (inhomogeneous systems).
Cerdeira H.A.	UNICAMP, Campinas, Brazil	1 Jan - 30 Nov 89	Quantum chaos.
Colavita A.	Univ. Nacional de San Luis, Argentina	1 Jan - 31 Dec 89	Microelectronics.
Crnkovic C.	Ruder Boskovic Inst., Zagreb, Yugoslavia	1 Jan - 1 Oct 89	String theory, conformal field theory.
Dai Jalin	Shanghai University of Technology, Shanghai, China	1 Jan - 31 Dec 89	Computer system design; digital signal processing; VLSI design.
Darus Z.	Univ. Kebangsaan Malaysia, Bangi, Malaysia	1 Jan - 31 Aug 89	VLSI design.
Drobac D.	Zagreb University, Yugoslavia	6 Mar - 6 July 89	Superconductivity.
Duong Minh Duc	Ho Chi Minh City University, Viet Nam	1 Jan - 11 Dec 89	Partial differential equations.
P. Ganguly	Indian Inst. of Science, Bangalore, India	3 Feb - 31 Dec 89	Superconducting materials.
Hantout Y.	Université des Sciences et Techniques Lille, France	1 Jan - 31 Dec 89	Non-commutative geometry.
Heller, K.J.	Jagellonian University, Krakow, Poland	1 Jan 89 - 30 Oct 90	Computational physics (applications in theoretical physics).
Hoang Le Minh	Ho Chi Minh City University, Viet Nam	13 Jan 89 - 12 Jan 90	Geometry.
Infante C.	University of Chile, Santiago	7 Feb - 31 Dec 89	Superconducting materials.
Komatsu H.		1 Jan - 1 Oct 89	SUSY phenomenology.
Kumar N.	Indian Inst. of Science, Bangalore	1 Jan - 15 May 89	High T_c superconductivity and localization.
Loo B.	(Malaysia)	1 Jan - Nov 89	Minimal surfaces.
Lubuma M.S.	Université de Kinshasa, Zaire	3 Feb 89 - 2 Feb 90	Integral equations for the Stokes problem in non-smooth domains (theory and numerical approximations).
Marzban C.	Univ. of North Carolina, USA	1 Jan 89 - 1 Oct 90	Conformal field theory.
Marrakchi A.L.	Univ. Mohamed V, Rabat, Morocco	16 Feb - 16 Aug 89	Induced gravity; conformal supergravity;
Marzban C.	Univ. of North Carolina, USA	1 Jan 89 - 1 Oct 90	Conformal field theory.
Marrakchi A.L.	Univ. Mohamed V, Rabat, Morocco	16 Feb - 16 Aug 89	Induced gravity; conformal supergravity; gauge field configurations in curved space-time.
Matacotta F.C.	Istituto per la tecnologia dei materiali metallici non tradizionali, Milan	1 Feb - 31 Dec 89	Superconducting materials.
Morales L.	UNAM, Ensenada, Mexico	31 Jan - 31 Oct 89	Superconducting materials.
Miller J.C.	Univ. of Oxford, UK	9 Feb - 9 Nov 89	Computational astrophysics.
Musina R.	SISSA, Trieste, Italy	9 Jan 89 - 8 Jan 90	Harmonic mappings and minimal surfaces.
Nafari N.	Sherif University of Technology, Tehran, Iran	1 Jan - 30 Sept 89	Density functional theory.
Narain K.		1 Jan - 31 Dec 89	Superstrings and conformal field theories.
Nevřiva M.			Superconducting materials.
Olmos C.	Univ. Nacional, Cordoba, Argentina	1 Jan - 28 Dec 89	Differential geometry.
Pankov A.A.	Polytechnic Inst., Gomel, USSR	1 Jan - 31 Sept 89	Phenomenology of electroweak interaction.
Randjbar-Daemi S.	ICTP	1 Jan - 31 Dec 89	Superstrings and conformal field theories.

Rashid R.I.M.A.	Univ. of Dhaka, Bangladesh	1 Jan - 12 Jun 89	Defects in solids; liquid theory.
Sezgin E.	ICTP	1 Jan - 31 Dec 89	Supermembranes and superstrings.
Shah K.T.	Knowledge Engineering Research, Toronto, Canada	1 Jan - 30 Jul 89	Artificial intelligence (automated theorem proving knowledge-based systems).
Shahshahani S.	Sherif University of Technology, Tehran, Iran	1 Jan - 14 Sept 89	Holomorphic dynamical systems.
Shamim A.A.		1 Jan - 31 Dec 89	Software development.
Soro D.	Institut de recherches mathématiques	1 Jan - 24 May 89	Digital signal processing.
Thakur P.K.	IIT, Kanpur, India	1 Jan - Nov 89	Conductance fluctuations.
Verjovsky A.	ICTP	1 Jan - 31 Dec 89	Dynamical Systems; Topology; Geometry.
Vila Freyer R.F.	CIMAT, Guanajuato, Mexico	1 Jan - 30 Aug 89	Vector bundles on Riemann surfaces.
Xu Cong	Beijing Normal Univ., China	1 Jan - 31 Dec 89	Extragalactic astrophysics.
Yu Lu	ICTP	1 Jan - 31 Dec 89	Low-dimensional physics and high T_c superconductivity.
Yu Ming		1 Jan 89 - 1 Sept 89	2-D conformal field theory.
Zafindratafa G.K.	E.E.S.S., Univ. of Fianarantsoa, Madagascar	1 Jan 89 - 3 Jan 90	Differential geometry of submanifolds.
Zhang J.Z.	Inst. of Mathematical Sciences, Chjengdu, China	1 Jan - 22 Oct 89	Mechanical theorem proving.

External Activities Sponsored by ICTP in 1989

Africa

Algeria	Arzew	Workshop on Plasma and Applications	July 2-6
Burundi	Bujumbura	IInd International Workshop on Mathematical Physics	September 25-October 7
Egypt	Alexandria	Course on Thermal Characterization of Materials, Scientific Principles Techniques and Applications	March 25-30
Egypt	Alexandria	The Second Arab International Conference on Materials Science	September 21-24
Egypt	Giza	Second International Conference on Applications of Solar and Renewable Energy	March 19-22
Egypt	Sinai	Conference on Solid-State Science and Applications	June 2-9
Ethiopia	Addis Ababa	Second Addis Ababa Workshop on the Applicability of Environmental Physics and Meteorology in	August 7-19
Ethiopia	Addis Ababa	Third International Workshop on Use of Microcomputer in Science and Mathematics Education	January 21-31
Ghana	Kumasi	Workshop on Ultrasound in Medical Practice	July 17-26
Kenya	Nairobi	Training Workshop in Gravimetry	January 9-February 4
Malawi	Zomba	Eighth Symposium of the Southern African Mathematical Association	December 11-15
Malawi	Zomba	Eighth Symposium of the Southern African Mathematical Association	December 11-15
Mali	Bamako	Séminaire Régional sur l'Enseignement des Sciences Physiques	August 1-31
Mali	Bamako	Training in Meteorology and Applications	March 15-April 12
Morocco	Meknes	Workshop on Physics and Agriculture	April 1-15
Nigeria	Ibadan	International Conference on Meteorological Hazards and Development	April/May
Nigeria	Ibadan	Workshop on Contemporary Problems in Stochastic Analysis and its Applications	October 9-13
Nigeria	Ilorin	II Bi-Regional African-Latin American Conference on Radio Propagation and Spectrum Management	November 6-8
Nigeria	Ilorin	International Workshop on Advances in Communication Physics and Techniques	November 9-14
Nigeria	Nsukka	Two week Workshop for in-serving Teachers of Senior Secondary School Mathematics	2 weeks at Easter
Sudan	Khartoum	Conference on the Problems of Teaching Physics at Secondary Schools	February
Sudan	Khartoum	The Third Nile Winter College	January 9-19

Tanzania	Arusha	First African Problem Session Seminar in Fluid Mechanics	September 20-30
Tanzania	Arusha	Second East African Symposium in Mathematics, Computer Science and Mathematics Education	September 11-17
Tanzania	Dar-es-Salaam	Seminar for Secondary Schools Mathematics Teachers	September 26-October 2
Tanzania	Dar-es-Salaam	The Teaching of Mathematics at Tertiary Level	June
Uganda	Kampala	Workshop for Mathematics & Physics	April 16-22
Zimbabwe	Harare	Advance Practical Workshop on Low-cost Microprocessor Based Sevices for use in Teaching & Research	February 6-10

Asia

India	Aligarh	Regional Workshop on Applicable Mathematics	March 6-16
India	Anantapur	Teaching aids in Physics Education	February 10-22
India	Bhopal	Eigth International Workshop on Physics of Materials	December 4-15
India	Bombay	School on Optoelectronics: Materials and Devices	August 22-September 2
India	Bombay	Workshop in High Energy Physics Phenomenology	January 2-14
India	Hyderabad	Algebraic Groups and Applications	December 8-18
India	Indore	Workshop on Laser-plasma Interaction	November 30-December 5
India	Jabalpur	Use of Computers in Teaching Physics and Mathematics	October
India	Kanpur	Workshop on Modern Optics Lasers and Laser Spectroscopy	December
India	Madras	Modern Course in Quantum Mechanics	May
India	Madras	Workshop on Microcomputers in Physics Teaching	January 9-13
India	Puri	Electronic Correlation and Disorder Effects in Metals	January 2-16
India	Tiruchirapalli	Workshop on Symmetries & Singularity Structure Aspects of Nonlinear Dynamical Systems	Second half 1989
India	Visakhapatnam	Computer Oriented Algorithms and Building Expert Systems	September 11-25
Nepal	Kathmandu	National Workshop on Education & Scientific Equipment	August
Pakistan	Islamabad	III Regional Conference on Mathematical Physics	February 18-24
Pakistan	Islamabad	Workshop on Telematics	March 5-30
Pakistan	Multan	First National Course on Materials Science	March 18-23
Sri Lanka	Kandy	Second International Symposium on Solid State Physics	April
Turkey	Ankara	International Conference on Beam-Solid Interactions	April 24-28

Europe

Czechoslovakia	Praha	Workshop on Applied Optics in Solar Energy III	August 28-September 1
Hungary	Budapest	International Conference on the Applications of the Mössbauer Effect	September 4-8
Yugoslavia	Croatia	VI Adriatic Meeting on Particle Physics	June 12-22

Far East

China	Beijing	International School of Lasers and Applications	July 2-11
China	Beijing	Ninth International Conference on Internal Friction and Ultrasonic Attenuation in Solids	July 17-20
China	Beijing	Ninth International Conference on Internal Friction and Ultrasonic Attenuation in Solids	July 17-20
China	Beijing	The Beijing International Workshop on High Tc Superconductivity	August 20-September 1
China	Beijing	The First Spring College on Plasma Physics: Diagnostics	April 15-28
China	Hangzhou	Workshop on Beam Transformation	May 10-17
China	Hefei	Conference/College on Synchrotron Radiation Application for Pacific and the Third World	May
China	Shanghai	International Conference on Nonlinear Physics	April 24-30
China	Shanghai	International Symposium on Optical Coatings	May 23-25
China	Shenyang	Spring College on Fractal Aspects of Materials	April 16-29
China	Shenyang	Workshop on the Physics of Materials	October 10-21
China	Wuhan	Workshop on Accretion and Jets in Astrophysics	June 8-13
Indonesia	East Java	Physics Teaching Stimulation for High School Students and their Physics Teachers	February 13-March 18
Indonesia	Yogyakarta	Regional Conference on Mathematics	June 20-23
Indonesia	Yogyakarta	XII National Physics Symposium	January 4-5

Malaysia	Kuala Lumpur	CONTACT - Courses on Techniques and Applications of Computer Technology	July 24-August 5
Malaysia	Kuala Lumpur	ICTP-UM Training Programme on Plasma and Pulse Technology	December 89-April 90
Malaysia	Kuala Lumpur	International Conference on Water Resources Beyond the Year 2000	October
Malaysia	Kuala Lumpur	Regional Medical Physics Conference	November
Malaysia	Kuala Lumpur	Workshop for Physics Teachers in Secondary Schools in Malaysia	April
Malaysia	Penang	Workshop on Geophysical Microcomputer Applications	June
Singapore		Tools and Devices in Physics & Mathematics Teaching	October 17-19
Thailand	Bangkok	Fourth Asian School on Computer Science: Declarative Programming Languages	December 4-15
Thailand	Bangkok	The Third International Conference of Path Integral from meV to MeV	January 9-13
Thailand	Chiang Mai	ASPEN Regional Workshop II on Computer Software Development for Physics Instruction	November
Thailand	Hatyai	Regional College on Plasma Applications	December

Latin America

Argentina	Bariloche	IV Argentine Symposium on Theoretical Physics of Particles and Fields	January 16-29
Argentina	Bariloche	Transformaciones Martensiticas en Materiales con Memoria de Forma	December 11-22
Argentina	Bariloche	Workshop on Localization, Superconductivity and Related Topics	August 20-30
Argentina	Buenos Aires	9th Course on Metallurgy and Materials Technology	March-December
Argentina	Buenos Aires	Course on Climatic Variability and its Environmental Impact	October 30-November 10
Argentina	Buenos Aires	Workshop on Energy for isolated settlements	August 21-September 1
Argentina	Córdoba	Third Workshop on Representation Theory of Lie Groups and its Applications	August 14-September 2
Argentina	Iguazú	XI Workshop on Nuclear Physics	August 28-September 1
Argentina	Tandil	Workshop on Fluid Dynamics	March 13-24
Brazil	Belo Horizonte	IV Brazilian School of Semiconductor Physics	January 23-February 3
Brazil	Brasilia	International Symposium on Current Trends in Condensed Matter Physics	January 23-27
Brazil	Brasilia	Winter School on Non-Linear Physical Phenomena	July 3-21
Brazil	Brasília	Workshop on Special Topics in Condensed Matter Physics	January 9-February 3
Brazil	Fortaleza	Course on Tropical Ocean-Atmosphere Interactions	February 13-March 10
Brazil	Rio de Janeiro	1st Latin American School on Fluid Mechanics	July 16-28
Brazil	Rio de Janeiro	First Brazilian School on Computer Algebra	July 24-August 11
Brazil	Rio de Janeiro	International Conference on Thermodynamics and Statistical Mechanics - STATPHYS 17	July 31-August
Brazil	Rio de Janeiro	Latin America Course on Mathematical Ecology	August 7-18
Brazil	Rio de Janeiro	VIII National Symposium in Physics Education	January 23-27
Brazil	Rio de Janeiro	VIth Brazilian School of Cosmology and Gravitation	July 20-31
Brazil	Rio de Janeiro	VIII National Symposium in Physics Education	January 23-27
Brazil	Rio de Janeiro	VIth Brazilian School of Cosmology and Gravitation	July 20-31
Brazil	Rio de Janeiro	Workshop on Thermal Science and Architecture	May
Brazil	São José	IV Jorge Andre Swieca Summer School of Nuclear Physics	February 19-March 1
Brazil	São Paulo	International Nuclear Physics Conference	August 20-26
Brazil	São Paulo	Physics Summer School Jorge André Swieca	January 8-21
Brazil	São Paulo	Workshop on the Role of the Physicist in Industry	April 10-14
Chile	Valparaíso	Latinamerican Meeting and Workshop on the use of Microcomputers in Science Teaching	January 16-20
Chile	Valparaíso	Third International Workshop on Instabilities and Nonequilibrium Structures	December 13-20
Colombia	Bogotá	International School on Synchrotron Radiation	August 7-20
Colombia	Bogotá	IV Course on Nuclear magnetic Resonance in Medicine	April 11-15
Colombia	Bogotá	IV Latin American Course on Biophysics	August 1-13
Colombia	Bucaramanga	I Latinamerican and II National Meeting on Optics	September 4-8
Colombia	Bucaramanga	II Workshop on Neural Network	August 7-18
Colombia	Medellin	Andean School on Expert Systems and Robotics	April 10-21
Cuba	Havana	Third Regional Workshop on Topics in Semiconductor Physics	November

Cuba	Havana	Workshop on High Temperature Superconductivity	January 9-14
Ecuador	Guayaquil	Advanced School on Meteorological and Oceanographic Aspect of El Niño	July 3-14
Mexico	Cuernavaca	Latin American School of Physics on Atomic and Molecular Physics	August 7-25
Mexico	Cuernavaca	Workshop on Collective Seismic Response of Deeply Embanked Sedimentary Structures	July 15-28
Mexico	Guanajuato	Master Programme in Mathematics Education	January 1 89-March 31 90
Mexico	Mexico, D.F.	Workshop in Algebraic Geometry	January 3-13
Mexico	Oaxtepec	Fifth Mexican School on Statistical Physics	August 27-September 2
Mexico	San Luis Potosi	Second Workshop on the Magnetic Properties of Low Dimensional Systems	May 22-26
Peru	Cusco + Trujillo	Course on Materials Science	August 7-18
Peru	Cusco	Course on the Applications of Physics to Archaeology and Geology	July 10-21
Peru	Cusco	Quantum Chemistry Course	September 11-22
Peru	Cusco	Workshop in Differential Equations	July 31-August 12
Peru	Cusco	Workshop on Seismic Risk in the Andes	November 6-7
Peru	Lima	Workshop on Scientific Instrumentation	February 13-17
Venezuela	Caracas	Latin American Superstring School (LASS'89)	March
Venezuela	Caracas	Latino American Summer School in Molecular Physics	June 15-30
Venezuela	Caracas	XI Simposio Latinoamericano de Física del Estado Sólido	October 23-27
Middle East			
Iraq	Baghdad	Baghdad School of Physics	September
Iraq	Baghdad	The Fifth Scientific Conference of the Scientific Research Council Baghdad	April 28-May 2
Jordan	Amman	Third Workshop on Van de Graaf Accelerators in Research, Training & Technological Applications	November
Jordan	Amman	Workshop on Lasers in Science & Technology	Spring
Jordan	Irbid	5th Petra School of Physics	September
Turkey	Adana	Workshop on Microcomputers in Physics Education	September 25-30
West Indies			
Trinidad	St. Augustine	First Carribbean Conference in Fluid Dynamics	January 8-11

Activities at ICTP in 1989

Fourth International Workshop on Computational Condensed Matter Physics: "Total Energy and Force Methods"	4 - 6 January
Workshop on Theoretical Fluid Mechanics and Applications	9 - 27 January
Course on Basic Telecommunications Science	9 January - 3 February
College on Atomic and Molecular Physics: Photon Assisted Collisions in Atoms and Molecules	30 January - 24 February
College on Theoretical and Experimental Radiopropagation Physics	6 - 24 February
Workshop on Space Physics: Materials in Microgravity	27 February - 17 March
Workshop on Remote Sensing Techniques with Applications to Agriculture, Water and Weather Resources	27 February - 21 March
Experimental Workshop on High Temperature Superconductors	30 March - 14 April
Spring School and Workshop on Superstrings	3 - 14 April
Workshop on Radon Monitoring on Radioprotection, Environmental Radioactivity and Earth Sciences	3 - 14 April
Topical Meeting on Hyperbolic Geometry and Ergodic Theory	17 - 28 April

Spring College on Materials Science on "Ceramics and Composite Materials"	17 April - 26 May
Conference on Oxygen Disorder Effects in High T_c Superconductors	18 - 21 April
Fourth Workshop on Perspectives in Nuclear Physics at Intermediate Energies	8 - 12 May
Spring School on Plasma Physics	15 May - 9 June
Working Party on Modelling Thermomechanical Behaviour of Materials	29 May - 16 June
Working Party on Fracture Physics	29 May - 16 June
Second ICFA School on Instrumentation in Elementary Particle Physics	12 - 23 June
Miniworkshop on "Strongly Correlated Electron Systems"	19 June - 21 July
Research Workshop in Condensed Matter, Atomic and Molecular Physics	19 June - 29 September
Interface between Quantum Field Theory and Condensed Matter Physics (Anniversary Adriatico Research Conference)	20 - 23 June
Summer School in High Energy Physics and Cosmology	26 June - 18 August
Quasicrystals (Anniversary Adriatico Research Conference)	4 - 7 July
Workshop on Superstrings	12 - 14 July
Conference on Supermembranes and Physics in 2+1 Dimensions	17 - 21 July
Strongly Correlated Electron Systems (Anniversary Adriatico Research Conference)	18 - 21 July
Symposium on "Highlights in Condensed Matter Physics"	1 - 3 August
Workshop on Phenomenology in High Energy Physics and Cosmology	16 - 18 August
Topical Meeting on Variational Problems in Analysis	28 August - 8 September
Computations in Physics and and Physics in Computation (Anniversary Adriatico Research Conference)	5 - 8 September
Adriatico Working Party on Condensed Matter Properties of Neutron Stars	11 - 29 September
Workshop on Materials Science and Physics of Nonconventional Energy Sources	11 - 29 September
Conference on Lasers in Chemistry	18 - 22 September
Workshop on Interaction between Physics and Architecture in Environment Conscious Design	25 - 29 September
Trieste Conference on Recent Developments in Conformal Field Theories	2 - 4 October
Fifth College on Microprocessors: Technology and Applications in Physics	2 - 27 October
Workshop on Soil Physics	9 - 27 October
College on Differential Geometry	30 October - 1 December
25th Anniversary Conference on "Frontiers in Physics, High Technology and Mathematics"	31 October - 3 November
Workshop on Telematics	6 - 24 November
ICTP & INFN Course on Basic VLSI Design Techniques	6 November - 1 December
Third Autumn Workshop on "Atmospheric Radiation and Cloud Physics"	27 November -15 December

For information and applications to courses, kindly write to the Scientific Programme Office.

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International Centre for Theoretical Physics
of IAEA and UNESCO
Strada Costiera, 11
P.O. Box 586
34136 Trieste, Italy

Telephone: (40) 22.401
Cable: CENTRATOM
Telex: 460392 ICTP I
Telefax: (40) 22.41.63
Bitnet: ROOT@ITSSISSA.BITNET

EDITORIAL NOTE - *News from ICTP* is not an official document of the International Centre for Theoretical Physics. Its purpose is to keep scientists informed on past and future activities at the Centre and initiatives in their home countries. Suggestions and criticisms should be addressed to Dr. A.M. Hamende, Scientific Information Officer.

TIPOGRAFIA-LITOGRAFIA MODERNA - TRIESTE - TEL. 76.53.29, 73.32.71