1964 to 1984

ICTP: Marking two decades of 'developmental aid' for science

Over the 20 years of its existence, the International Centre for Theoretical Physics (ICTP) has evolved with the times, gradually expanding its scientific scope to cover a wider range of applicable physics programmes directly relevant to economic progress.

One particular area of recent emphasis is physics and energy. Physics is fundamental to mankind's efficient use of energy resources, whether they are finite fuels such as oil and natural gas, "renewables" such as solar energy and biomass, or so-called "non-conventional" supplies such as nuclear fission and fusion. Apart from the work at ICTP, however, few, if any, international research centres offer training and facilities for high-level physicists from the developing world, where energy problems often are most severe.

To fill part of the need, ICTP has developed programmes covering various aspects of energy problems. Regarding solar energy's development, for example, more than 1000 physicists are participating in research efforts particularly emphasizing absorbing surfaces, since efficient and cost-effective photovoltaics depend on physics of solid-state materials.

In fission and reactor physics, activity also is intense, and the Centre features a series of workshops, seminars and research courses devoted to specialized topics ranging from nuclear data and computer coding to heavy ion accelerators.

Activities in plasma physics and its application to fusion began two decades ago and have grown to contribute to research advances internationally. Research groups now are active in six developing countries, and scientists from industrialized nations regularly collaborate in research projects and information exchange programmes.

In these and other fields of physics, ICTP conferences, colleges, workshops, and research facilities annually attract thousands of highly qualified scientists from all over the world, functioning effectively as a unique form of scientific "developmental aid" for industrialized and developing nations alike. Overall, nearly 2200 scientists from 100 different countries visited the Centre in 1983, more than twice as many than just a decade ago.

Participation in ICTP activities by scientists from developing Member States of IAEA and UNESCO – the two sponsoring international organizations – has grown to about 70% of total participation during the past 10 years. The amount of time (measured in man-months) these scientists annually spend at the Centre has multiplied sevenfold since 1964.

While ICTP's work has grown to encompass all aspects of physics and mathematics, future plans call for increasing assistance to experimental physicists and arranging for laboratory training in more national laboratories outside Italy, the Centre's host nation. ICTP also will continue to stress specific actions – such as co-sponsoring or organizing scientific meetings outside the Centre and closer to groups of scientists it is seeking to help – that stimulate the growth of scientific communities within developing nations so that such groups can directly assist the development process.

Currently about 200 scientists from the developing world are associates of the Centre, which entitles them to work or study at ICTP for up to three months at a

Scientists participating in ICTP activities

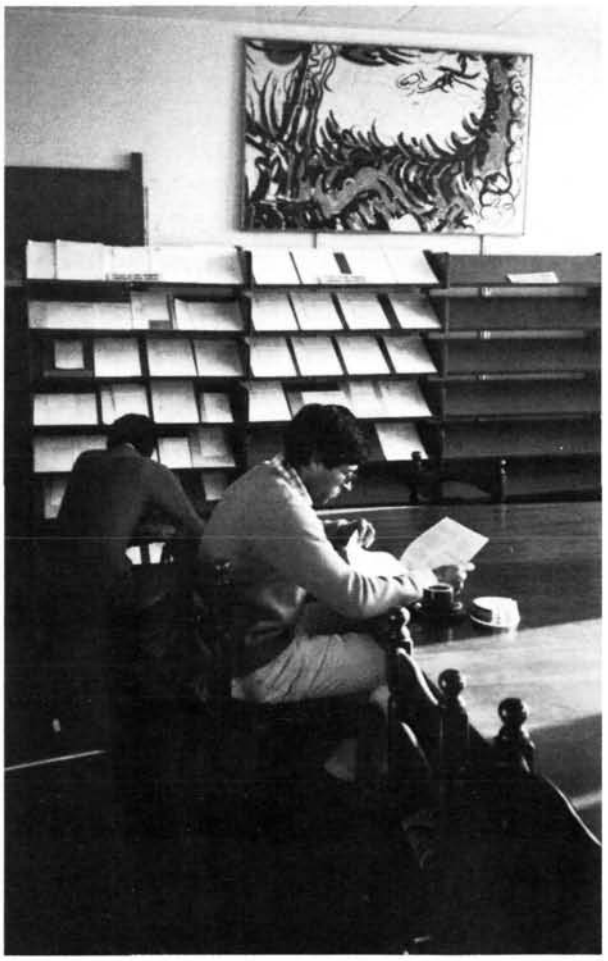
Year	Number from developing countries	Number from industrialized countries	Total
1970	186	310	496
1971	300	486	786
1972	328	387	715
1973	379	567	946
1974	329	531	860
1975	399	529	928
1976	387	575	962
1977	644	687	1331
1978	655	672	1327
1979	619	851	1470
1980	799	662	1461
1981	960	973	1933
1982	871	1111	1982
1983	1160	1028	2188

The Centre building in Trieste, Italy.
(Photo by M. Bernardy, IAEA)

time over a six-year span, to improve research and teaching skills. Overall, the Centre's federated network today stretches to 102 physics institutes in 41 developing countries, and its library distribution system now makes books, journals, and reports accessible to researchers in 132 institutions in 66 countries.

Funding has risen dramatically since 1964, making it possible to broaden both the scope of ICTP work and scientific participation. In 1984, the budget was just over US $5 million, provided from the three principal donors – Italy, IAEA, and UNESCO – and to a lesser degree from grants of patrons including governmental agencies and private organizations.

Physicists use the Centre's reading room to review scientific papers available on open display. ▶
(Photo by M. Bernardy, IAEA)



Physicists at the Centre frequently meet informally to solve problems, compare notes. ▼
(Photo by M. Bernardy, IAEA)

Activities of the International Centre for Theoretical Physics for 1985

College on lasers, atomic and molecular physics	21 Jan.–22 March
Second workshop in nuclear physics at intermediate energies	25–29 March
College on soil physics	15 April–10 May
Workshop on quality control of X-ray equipment	13–18 May
Workshop on mathematics in industry	13–24 May
Spring College on radiation in plasmas	27 May–21 June
Summer Workshop on high energy physics and cosmology, (including a Conference on grand unified theories)	17 June–2 August
Sixth Trieste International Symposium (Solid State)	Date to be fixed
Summer Workshop on condensed matter physics	24 June–6 Sept.
Working Party on mechanical properties	6–30 August
Seventh Trieste International Symposium on hopping transport	27–30 August
Conference and Workshop on the physics of non-conventional energy sources and material science for energy	2–20 Sept.
Topical Meeting on phase-space approach to nuclear dynamics	30 Sept.–4 Oct.
Third Trieste College on microprocessors: technology and applications in physics	7 Oct.–1 Nov.
Workshop on semi-groups and applications (Follow-up to the 1984 College)	7 Oct.–1 Nov.
College on representation theory of lie groups	4 Nov.–6 Dec.
Workshop on graded differential geometry	9–13 Dec.

Outside activities

Latin American Regional College on microprocessors: technology and applications (Bogotà, Colombia)	June
International Workshop on sand transportation and desertification in arid lands (Khartoum, Sudan)	Autumn

Hosted activities

Training session for African geophysics (tentative)	January
Conference on active galactic nuclei	10–13 April
Conference on new avenues in the use of physical methods for datation and characterization of archaeological findings	April (3 days)

Further information can be obtained from the ICTP, Strada Costiera 11, P.O.Box 586, Miramare, I-34100 Trieste, Italy.