



Report of activities of the Mesoamerican Centre for Theoretical Physics (MCTP) 2012-2014

Arnulfo Zepeda
Director of MCTP

ICTP, Trieste, Italy
October, 2014

Content

- Memorandum of Understanding
- Decree of creation
- Identity of the MCTP
- Advisory meetings
- 2013 Mesoamerican Academic Planning Meeting.
- 2103 Opening Ceremony
- 2013 Scientific Council Meeting and Annual Report

(Continue in the next slide...)

Content

- Education
 - Propaedeutic courses in Physics and in Mathematics
 - Regional Doctorate in Physics and Regional Doctorate in Mathematics CSUCA
- Schools and Conferences Program
- ICTP – MAIS: An UNESCO institute Category 2

Memorandum of Understanding



Fernando Quevedo, Director of ICTP
Jaime Valls, President of UNACH

December 20, 2011



Decree of creation

- On August 27, 2012 the **decree of creation** of the Mesoamerican Centre for Theoretical Physics (MCTP) was signed at UNACH. In this important event participated **Verónica Riquer** representing Fernando Quevedo, and Prof. **Luciano Maiani** gave the inaugural seminar “Highlights on the CERN discovery of a boson at 125 GeV”.



Decree of creation



Jaime Valls, President of UNACH signing the Decree of creation of MCTP

Identity of MCTP

- **Mission of MCTP**

To contribute to the development of Basic and Applied Science, particularly in Physics, Mathematics, Energy and Environment, through **professional and advanced education, research and extension of knowledge** in the region of Central America, the Caribbean and Mexico.

ICTP

Identity of MCTP

- **Vision**

To be the center of **education, academic mobility, extension and research** in basic and applied sciences that promotes scientific and technological development of the **highest quality and excellence in the region** of Central America, the Caribbean and Mexico.

ICTP

Identity of MCTP

Government Bodies

- **Advisory Council**

The Advisory Council is the top advisory body of MCTP. This body analyzes and makes decisive recommendations about the major policies of MCTP, which includes: internal regulations, academic organization, integration, resources, plans, programs, institutional development projects, and hiring, retention and promotion of staff and students.

Advisory Council



Jaime Valls Esponda
President of UNACH



Fernando Quevedo Rodríguez
Director of ICTP



Alfonso Fuentes Soria
Executive Secretary of CSUCA



Enrique Cabrero Mendoza
Director of CONACyT

Advisory Council



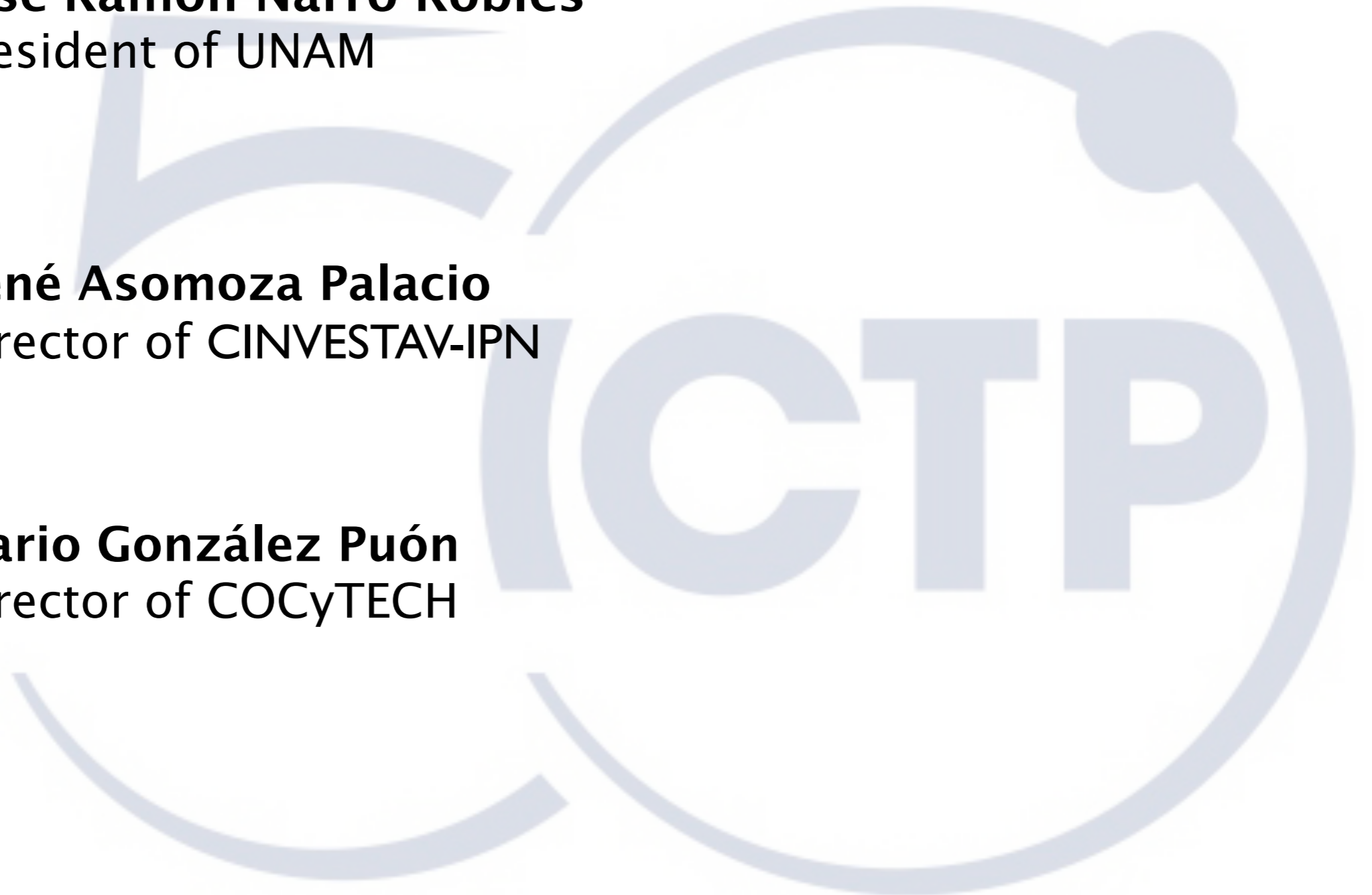
José Ramón Narro Robles
President of UNAM



René Asomoza Palacio
Director of CINVESTAV-IPN



Mario González Puón
Director of COCyTECH



Identity of MCTP

Government Bodies

- **Scientific Council**

The Scientific Council of MCTP is a body of opinion and evaluation in scientific – academic issues. It consists of a body of 10 internationally recognized scientists, in which scientists from the region of Central America, the Caribbean and Mexico are included . The current president of the Scientific Council is the 1979 Physics Nobel Prize winner Sheldon Lee Glashow.

Scientific Council



Sheldon Glashow
Nobel Prize in Physics (1979)



Ana María Cetto
Professor at UNAM



Armando Euceda
EX-Deputy Minister of Education in Honduras



Carlos Frenk
Professor at University of Durham, England

Scientific Council



Walter Mérida
Professor at British Columbia



Xenia de la Ossa
Professor at University of Oxford



Verónica Riquer
Professor at La Sapienza University



Luis F. Rodríguez
Professor at UNAM

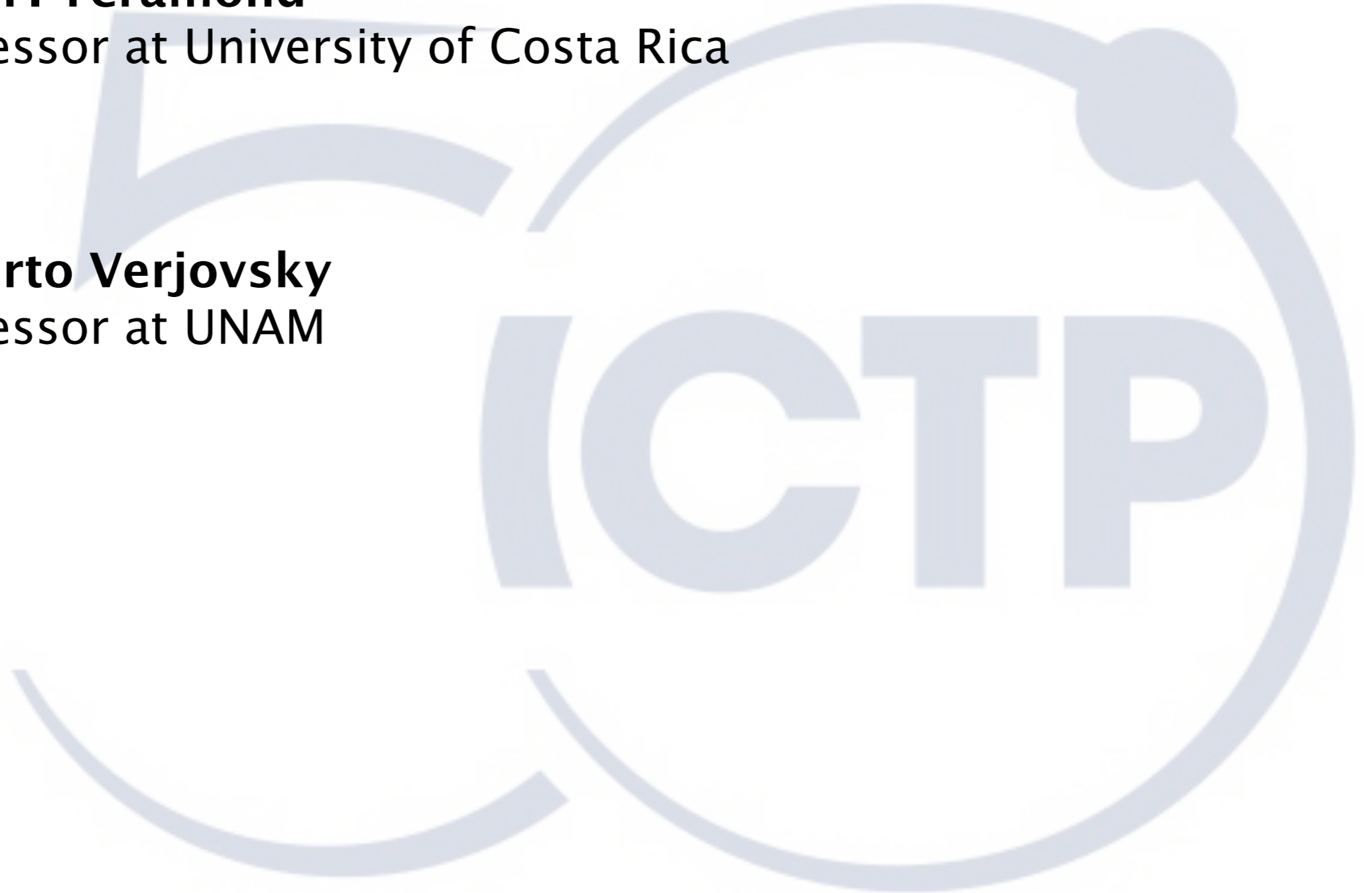
Scientific Council



Guy F. Téramond
Professor at University of Costa Rica



Alberto Verjovsky
Professor at UNAM



Identity of MCTP

Government Bodies

- **Directorate**

The directorate of MCTP is integrated by Arnulfo Zepeda, Director; and Eli Santos, Deputy Director.



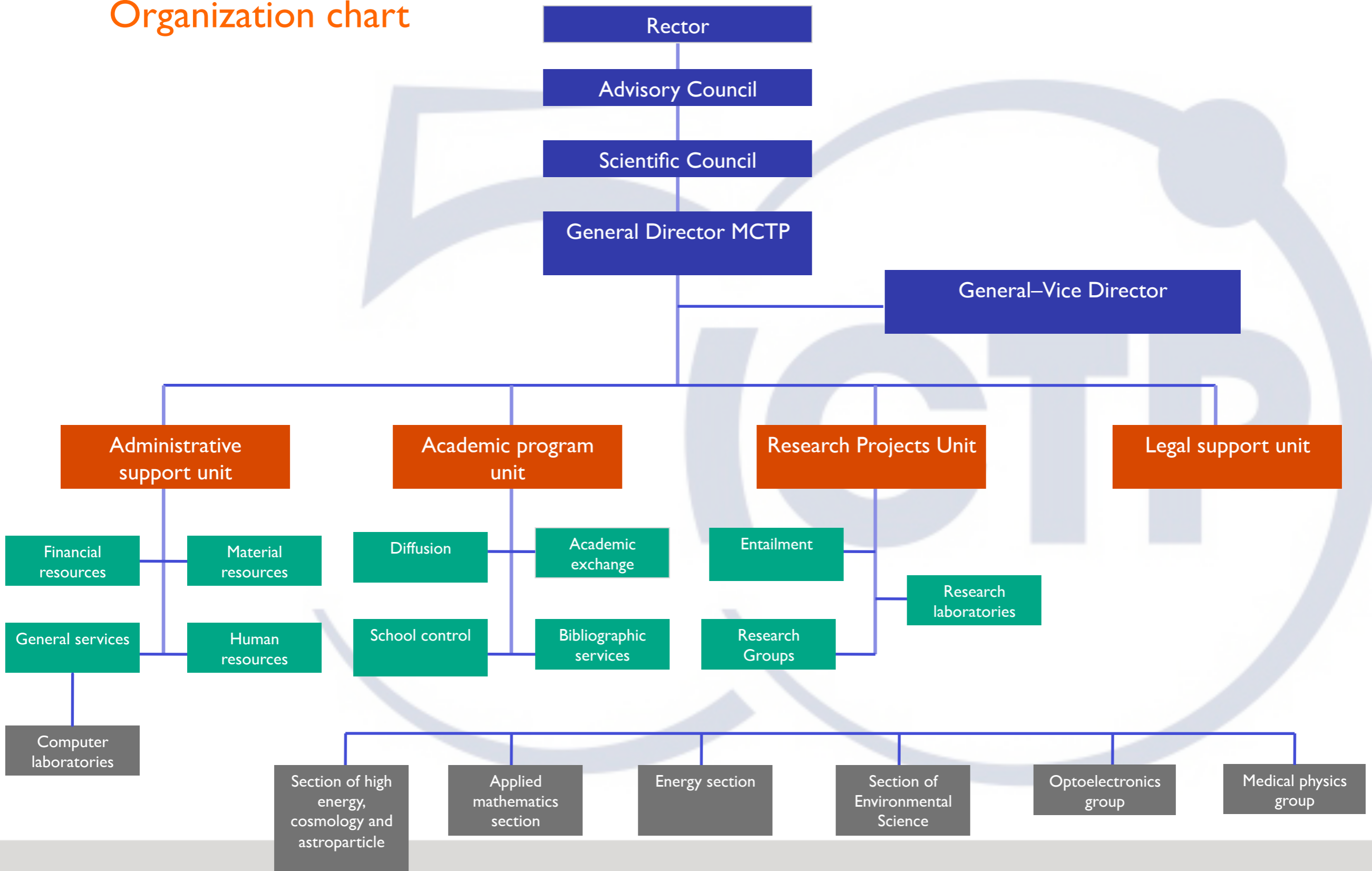
Arnulfo Zepeda is Emeritus Researcher of the Center for Research and Advanced Studies of the National Polytechnic Institute (Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, CINVESTAV)



Elí Santos is founder of the Faculty of Sciences in Physics and Mathematics of the Autonomous University of Chiapas (Universidad Autónoma de Chiapas UNACH)

Organization

Organization chart



Staff of MCTP



Directors and members of the staff of MCTP in University City UNACH

Programs of MCTP

MCTP Programs

- Exchange and Mobility
- Schools and Conferences
- Scientific Meetings
- Associates Scheme
- Visiting Scientists
- Postdoctoral stays
- Mexican laboratories
- Access to Information



Advisory meetings



Advisory Committee meeting

- On February 13 – 15, 2013 an “Advisory Committee” meeting was held to formulate the Development Plan of MCTP. This committee was integrated by members of several universities of Mexico and Central America.



Opening Ceremony



Opening Ceremony

- On Friday June 14, 2013 the formal constitution of the **Advisory Council and of the Scientific Council** of MCTP was held and the initial documents of MCTP were reviewed.
- This meeting was followed on the same day by the “Opening Ceremony” entitled “**Context and Perspective of MCTP**” on the Central Campus of the Autonomous University of Chiapas.
- Sheldon Glashow, Nobel Prize in Physics (1979) delivered the lecture “**A Parable of the Pure and the Practical: Why We Must Pursue Basic Scientific Research**”.
- Fernando Quevedo, Director of the ICTP, delivered the lecture “**The Importance of International Scientific Research Institutions**”

Opening Ceremony



Jaime Valls, President of UNACH signing the establishment of the councils of the MCTP

Opening Ceremony



Prof. Sheldon Glashow at the MCTP

Opening Ceremony



Opening Ceremony: Context and Perspective of the MCTP

Mesoamerican academic meetings



Mesoamerican academic meetings

- On August 27, 2013, celebrating the first anniversary of MCTP, an **MCTP-CSUCA Working Meeting** was held. In this meeting the **PhD Programme in Physics and Mathematics in Mesoamerica** were discussed.



Scientific council meeting and annual report



Scientific council meeting

- On December 9, 2013 **Xenia de la Ossa, Verónica Riquer, Ana María Cetto and Luis Felipe Rodríguez**, members of the Scientific Council of MCTP met on the premises of MCTP.
- Arnulfo Zepeda, Elí Santos Rodríguez and other staff members of MCTP gave an **annual report to the Scientific Council**.

ICTP

Scientific council meeting



Elí Santos, Arnulfo Zepeda, Xenia de la Ossa, Verónica Riquer and Luis F. Rodríguez

Research



Research

- The MCTP has four strategic lines of research:
 - Physics
 - Mathematics
 - Energy
 - Environment



Education



Education

Propedeutic courses in Physics

- The purpose of these courses is to **improve and level the academic preparation of students in Mesoamerica** interested in applying to graduate programs in Physics.
- Courses:
 - Mathematical Methods
 - Electromagnetism
 - Thermodynamics
 - Classical Mechanics

Education

- The total hours of the propaedeutic courses are 140.
- These propedeutic courses are supported by Cinvestav, SMF, CONACYT and UNACH.
- The number of attendees for this course was 4
 - 1 Guatemala
 - 3 Venezuela

Education

Propedeutic courses in Physics



Education

Propedeutic courses in Physics



Students of the propedeutic course and the staff of the MCTP

Education

Propedeutic courses in Mathematics

- The purpose of these courses is to **improve and level the academic preparation of students in Mesoamerica** interested in applying to graduate programs in Mathematics.
- The **total hours** of the propaedeutic courses are 140.
- These propedeutic courses are supported by UNAM, ICTP, CONACYT, CSUCA and UNACH.
- This courses will begin on January 5, 2015

Education

Regional Doctorate in Physics and Regional Doctorate in Mathematics CSUCA

- These doctoral programs are partially sponsored by the International Centre for Theoretical Physics (ICTP), the Mesoamerican Centre for Theoretical Physics (MCTP), and the State University System of the Colombian Caribbean (SUE-Caribbean).

Education

In the Regional Doctorate in Physics and Regional Doctorate in Mathematics CSUCA participate the next institutions:

- Universidad de San Carlos de Guatemala (USAC)
- Universidad de El Salvador (UES)
- Universidad Nacional Autónoma de Honduras (UNAH)
- Universidad Nacional, Costa Rica (UNA)
- Universidad de Panamá (UP)
- Universidad Tecnológica de Panamá (UTP)
- Universidad Autónoma de Santo Domingo (UASD)

Education

Regional Doctorate in Physics and Regional Doctorate in Mathematics CSUCA



Meeting of the committees for selection of candidates for doctorates in Physics and Mathematics CSUCA

Schools and Conferences Program



Schools and Conferences Program

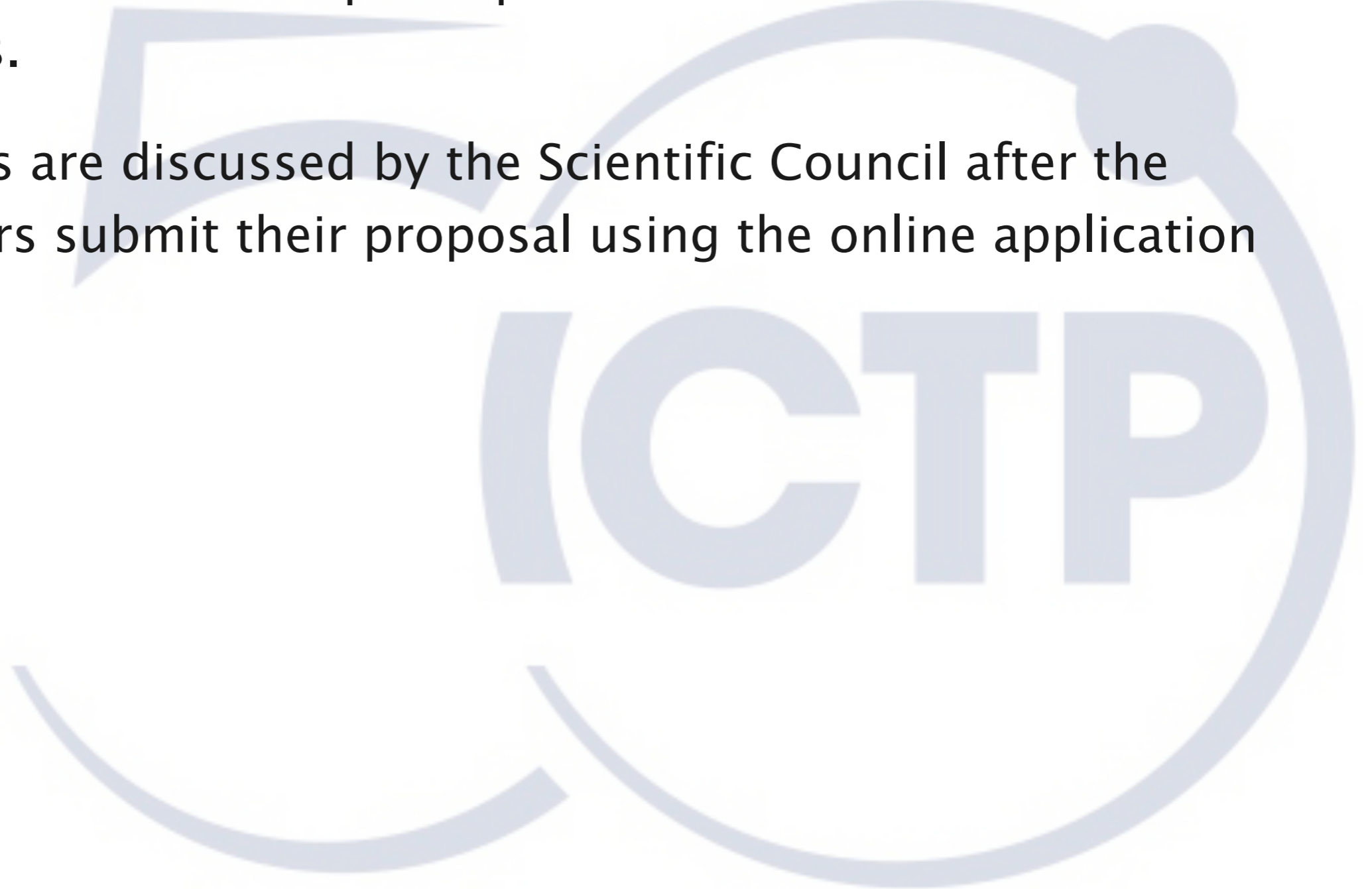
- The MCTP's program of Schools and Scientific Conference is **projected on an bi-annualized basis**. Participation to do events is by call.

This program includes the four research areas of the Centre are: **Energy, Physics, Mathematics and Environment**.

- The MCTP will have resources to support activities held at the new MCTP facilities at UNACH. These activities are expected to include conferences, workshops, one week and two-week schools as well as mini-courses on specialized topics for PhD students and post-docs.

Schools and Conferences Program

- MCTP is able to **finance local and travel expenses** for some lecturers and for some participants from Mesoamerican countries.
- Proposals are discussed by the Scientific Council after the organizers submit their proposal using the online application form.



Schools and Conferences Program

Some important activities carried out in the MCTP:

- **Opening Ceremony. Context and Perspective of the MCTP**
June 14, 2013
- **Working Meeting MCTP-CSUCA**
August 27, 2013
- **International Symposium on Micro-emulsions, foams, Rheology, Colloids and Interfaces in honor of Dominique Langevin**
12 - 15 November, 2013
- **Workshop on the Use of Space Science and Technology for the Prevention of and Response to Disasters in Mesoamerica**
November 19-22, 2013

Schools and Conferences Program

Some important activities carried out in the MCTP:

- **Meeting on Extra Dimensions**
November 20-22, 2013
- **Entrepreneurship Workshop for Scientists and Engineers**
December 2-6, 2013
- **X International Symposium on Radiation Physics**
April 2 - 5, 2014
- **ICTP-ICO-MCTP College on Optics and Energy**
April 28 - may 9, 2014

Schools and Conferences Program

- **Introduction to Modern Cosmology**
July 14 - August 1, 2014
- **Talk: "Symmetries, conservation laws and the work of Emmy Noether"** By PhD Xennia de la Ossa
July 24, 2014
- **Professional skills workshop for young scientists**
July 30 - August 2, 2014
- **Talk: "Five decades of Mexican science"**. By PhD Jorge Flores Valdés
September 8, 2014

Schools and Conferences Program

Attendance statistics 2012

	Mexico	Usa	France	Brazil	Guatemala	Panamá	Costa Rica	El Salvador	Nicaragua	Venezuela	Peru	United Kingdom	Italy	TOTAL
HAWC Collaboration Meeting-Fall 2012	14	32												46
TOTAL	14	32	0	0	0	0	0	0	0	0	0	0	0	46

Schools and Conferences Program

Attendance statistics 2013

	Mexico	Usa	France	Brazil	Guatemala	Panamá	Costa Rica	El Salvador	Nicaragua	Venezuela	Peru	United Kingdom	Italy	TOTAL
International Symposium on Micro-emulsions, foams, Rheology, Colloids and Interfaces in honor of Dominique Langevin	26	1	1											28
Workshop on the Use of Space Science and Technology for the Prevention of and Response to Disasters in Mesoam	15	5		1	1	2	2							26
Meeting on Extra Dimensions	21				1		7	1				2		32
Entrepreneurship Workshop for Scientists and Engineers	30	6	1				3		3	1	2	3	1	50
TOTAL	92	12	2	1	2	2	12	1	3	1	2	5	1	136

Schools and Conferences Program

Attendance statistics 2014

	Mexico	Usa	France	Brazil	Guatemala	Panamá	Costa Rica	Colombia	Bolivia	Honduras	El Salvador	Nicaragua	Venezuela	Peru	Cuba	Argentina	Spain	Germany	United Kingdom	Bulgary	Italy	TOTAL
X International Symposium on Radiation Physics	30	2											1			1		1		1	1	37
ICTP-ICO-MCTP College on Optics and Energy	26	3			1			2	1		5		1		1		2				1	43
Professional Skills Workshop for Young Scientific	32				1			3		1					2							39
Introduction to Modern Cosmology	26				1			1		2	4		3							1		38
TOTAL	114	5	0	0	3	0	0	6	1	3	9	0	5	0	3	1	2	1	1	1	2	157

Schools and Conferences Program



Hawc Collaaboration Meeting – fall 2012



Schools and Conferences Program



Workshop on the Use of Space Science and Technology for the Prevention of and Response to Disasters in Mesoamerica (november 2013)



Meeting on Extra Dimensions (november 2013)

Schools and Conferences Program



Entrepreneurship Workshop for Scientists and Engineers 2013 (december 2013)

Schools and Conferences Program



X International Symposium on Radiation Physics (ISRP) (april 2014)

Schools and Conferences Program



ICTP-ICO-MCTP College on Optics and Energy (april 2014)

Schools and Conferences Program



Introduction to Modern Cosmology (july 2014)

ICTP – MAIS: A UNESCO institute Category 2



ICTP – MAIS

- In 2014 the Autonomous University of Chiapas has begun the process to **obtain the recognition for the MCTP as a Research Center Category II sponsored by UNESCO**
- The preliminary results of the feasibility study instructed by Mrs. Irina Bokova, General Director of UNESCO, show that **the proposal is fully viable.**
- The Secretariat of **the Executive Council will submit for consideration of the 197 session of the General Assembly** in November 2015 this process of recognition of the MCTP
- In order to accompany academically this process, the following activity is being organized:
- **Regional Seminar UNACH-ICTP-UNESCO Science for Development** integrated of six bimonthly one day conferences.

ICTP – MAIS



Jaime Valls and Verónica Riquer at UNESCO headquarters in France

Conclusions

- MCTP is running well and healthy.
- MCTP will become a UNESCO category 2 center.
- MCTP is ready to properly use a budget four times as big as the present one.
- THANK YOU FOR YOUR ATTENTION.

