THE ROLE OF RESEARCH IN THE INTERNATIONAL RELATIONS

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INFN & Sapienza Universita' di Roma

XVI International Conference on Science, Arts and Culture
International Conference ON SESAME
In Honour of Paolo Budinich
29 August - 2 September 2016
Veli Lošinj, Croatia

A SLIGHT CHANGE IN TITLE

- Present removed since there is no present without an history
- Basic removed since there is only one research often instrumentally split in basic and applied

COOPERATION DOES NOT COME AS A BASIC INSTINCT

You need both:

- a group of humans (perhaps a single one might suffice) with vision
- an objective crisis situation that facilitate their design to materialise

THE MOTHER OF ALL AND THOSE FOLLOWING THE EXAMPLE

- CERN
- ICTP
- SESAME

ALLOW ME TO

- express the personal pride as an italian (and who knows me can certify that very seldom I feel so for what my fellow citizens do)
- Edoardo Amaldi for CERN
- Paolo Budinich for ICTP
- Sergio Fubini for SESAME

of course together with other people with the same vision

CERN: HOW SCIENCE IN EUROPE WAS REBORN

Physics has contributed to redefine the very same concept of Europe

INFN never forget its roots

Edoardo Amaldi: a true statesman of science

Founder of INFN

First Secretary General
of CERN

co-Founder of ESRO
(later to became ESA)

and sticks to peace policy

During a trip to the US in 1946, Amaldi was offered a chair at the University of Chicago by none other than Fermi, but he declined because he felt a duty to take care of scientific development in his homeland. During the visit, Amaldi was confronted by the restrictions imposed on results and topics in "his" physics because of real or supposed military interest. He realized that, beyond a certain limit, it was impossible for him to talk freely even with Fermi about problems in nuclear physics. Amaldi found this disturbing on ethical grounds and detrimental to scientific progress. The experience strengthened his conviction acquired during the war years that genuine scientific collaboration is planned free from military control – a general policy to which he adhered strictly in the following years.

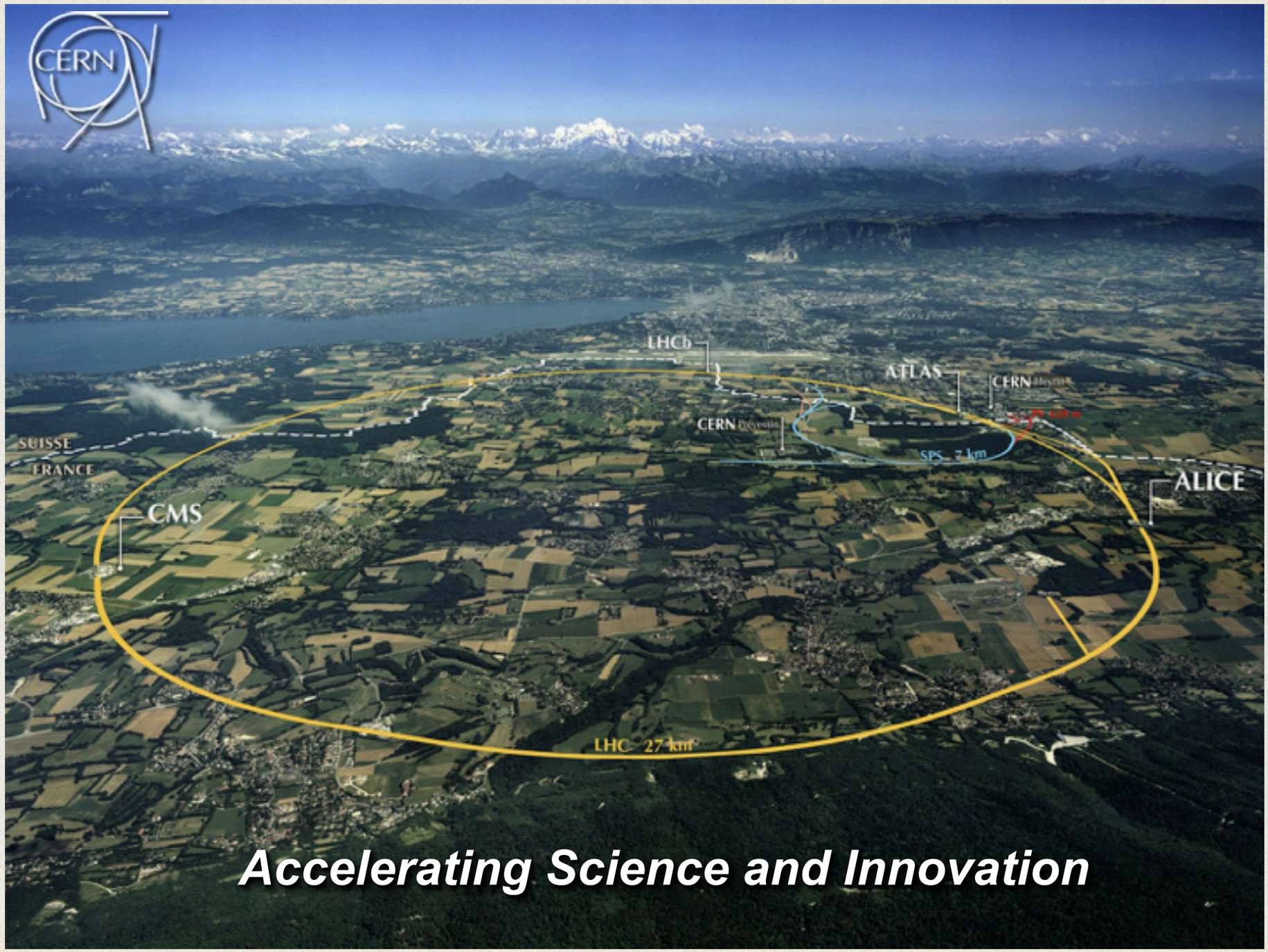
I THINK THAT YOU HAD TO BE A REAL GIANT FOR

- carrying on this idea and bring it to success
- in the aftermath of the second world war where the main nations at the base of CERN were on opposite fronts
- with the tragedy of nazifascism and holocaust very present in mind
- with idea the SCIENCE CAN BE THE MAIN MECHANISM TO UNITE PEOPLE BEYOND DIFFERENT CULTURES
- but (THIS IS KEY) without compromising on the EXCELLENCE OF RESEARCH

AND ALTHOUGH THE IDEA WAS

- to help european countries to get back on the world of physics
- when most of the european physicist were in USA having brought that country to a level of unprecedented excellence
- as a matter of facts it worked so well that now the barycentre of fundamental physics is very firmly in Europe

CERN TODAY


CERN
LHCb
ATLAS
CERN
CERN
SPS 7 km
SUISSE
FRANCE
CMS
ALICE
LHC 27 km
Accelerating Science and Innovation

SCIENCE- TECHNOLOGY-TRAINING-HUMAN RELATIONS

WITH SOLID FOUNDATION YOU CAN RISK TO BECOME MORE GLOBAL

CERN was founded in 1954: 12 European States
Today: 22 Member States

Member States: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Israel, **Italy**, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Spain, Sweden, Switzerland and United Kingdom

Associate Member States: Pakistan, Turkey

States in accession to Membership: Cyprus, Serbia

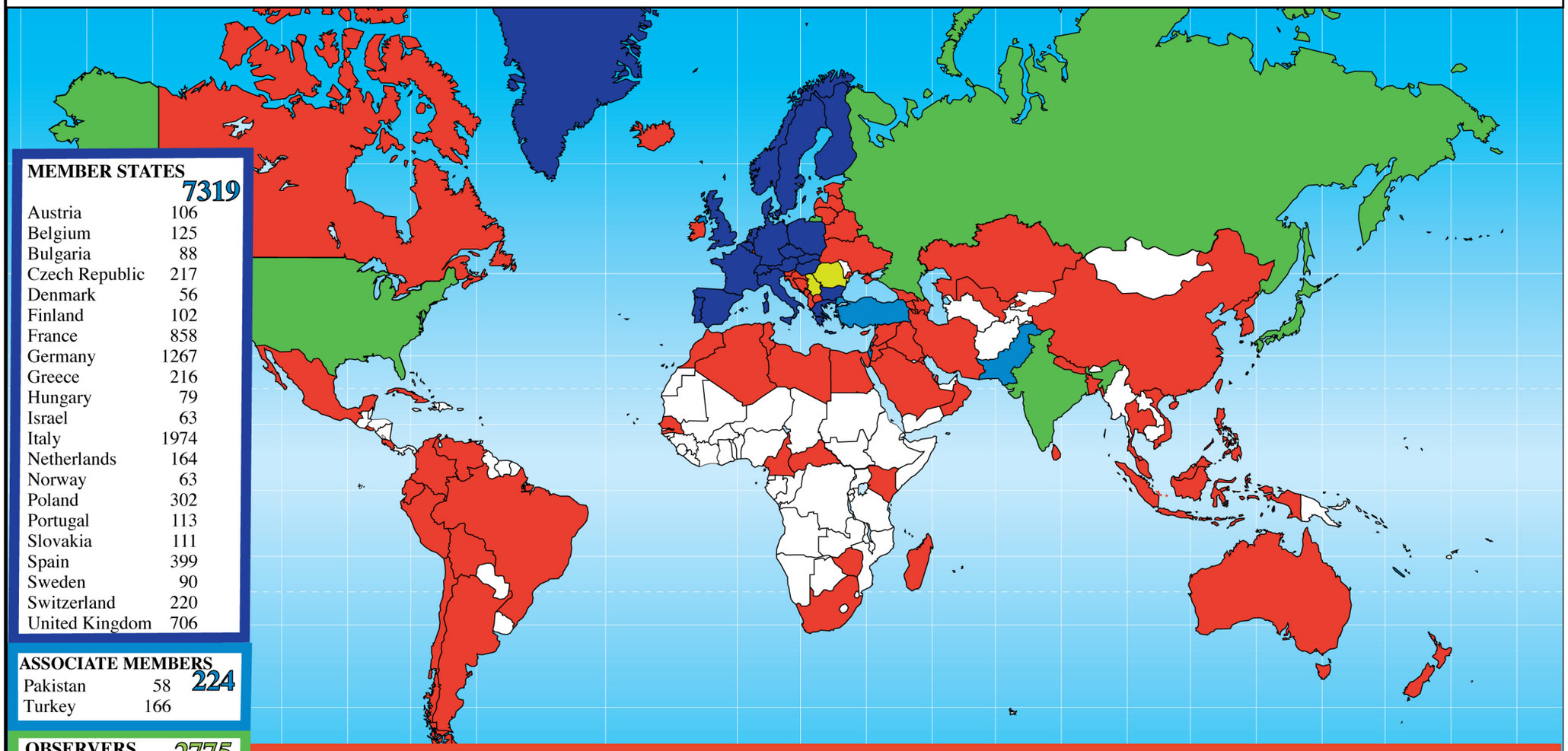
Applications for Membership or Associate Membership:
Brazil, Croatia, India, Lithuania, Russia, Slovenia, Ukraine

Observers to Council: India, Japan, Russia, United States of America; European Union, JINR and UNESCO

~ 2300 staff, 3700 on payroll
~ 12500 users
Budget (2016) ~1000 MCHF (~ 1 cappuccino per year for each citizen of a member state):
each Member State contributes in proportion to its income.

INDEED GLOBALISATION (AT LEAST) IN PHYSICS IS NOT SUCH A BAD WORD

Distribution of All CERN Users by Nationality on 12 January 2016



MEMBER STATES 7319

Austria	106
Belgium	125
Bulgaria	88
Czech Republic	217
Denmark	56
Finland	102
France	858
Germany	1267
Greece	216
Hungary	79
Israel	63
Italy	1974
Netherlands	164
Norway	63
Poland	302
Portugal	113
Slovakia	111
Spain	399
Sweden	90
Switzerland	220
United Kingdom	706

ASSOCIATE MEMBERS 224

Pakistan	58
Turkey	166

OBSERVERS 2775

India	284
Japan	316
Russia	1071
USA	1104

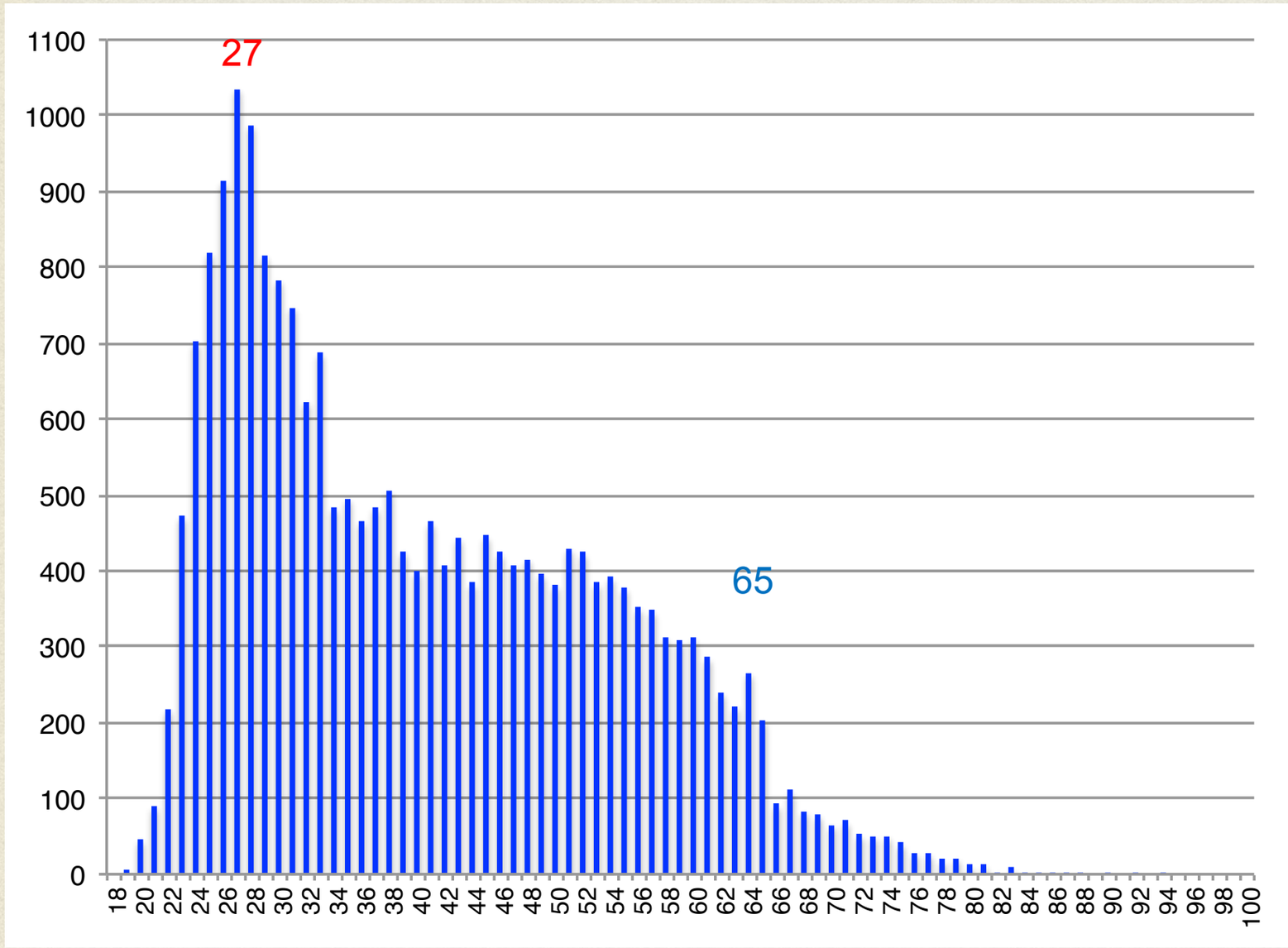
STATES IN ACCESSION TO MEMBERSHIP 176

Romania	131
Serbia	45

OTHERS 1822

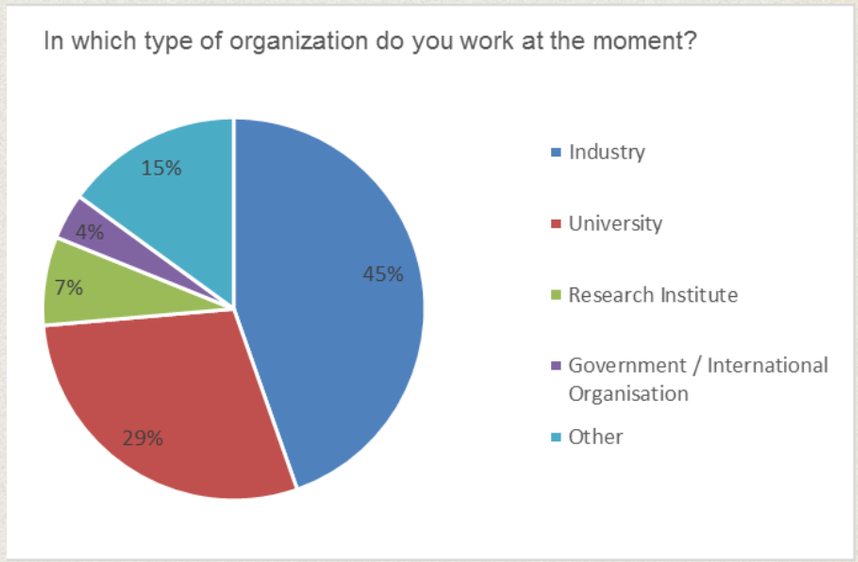
Albania	4	Bosnia & Herzegovina	1	Cyprus	19	Jordan	8	Malaysia	18	Philippines	4	Taiwan	56
Algeria	8	Brazil	135	Ecuador	4	Kazakhstan	1	Malta	5	Qatar	1	Thailand	20
Argentina	24	Cameroon	2	Egypt	24	Kenya	2	Mauritius	1	San Marino	1	T.F.Y.R.O.M.	2
Armenia	27	Canada	154	El Salvador	1	Korea, D.P.R.	4	Mexico	84	Saudi Arabia	1	Tunisia	3
Australia	31	Central African Rep.	1	Estonia	15	Korea Rep.	151	Montenegro	2	Senegal	1	Ukraine	88
Azerbaijan	11	Chile	20	Georgia	44	Latvia	1	Morocco	13	Singapore	3	Uzbekistan	5
Bangladesh	7	China	421	Iceland	4	Lebanon	12	Nepal	7	Sint Maarten	1	Venezuela	11
Belarus	50	Colombia	38	Indonesia	10	Libya	1	New Zealand	6	Slovenia	27	Viet Nam	8
Bolivia	2	Costa Rica	1	Iran	54	Lithuania	30	Oman	1	South Africa	31	Zimbabwe	5
		Croatia	38	Iraq	1	Luxembourg	2	Palestine (O.T.).	7	Sri Lanka	3		
		Cuba	13	Ireland	20	Madagascar	4	Peru	6	Syria	1		

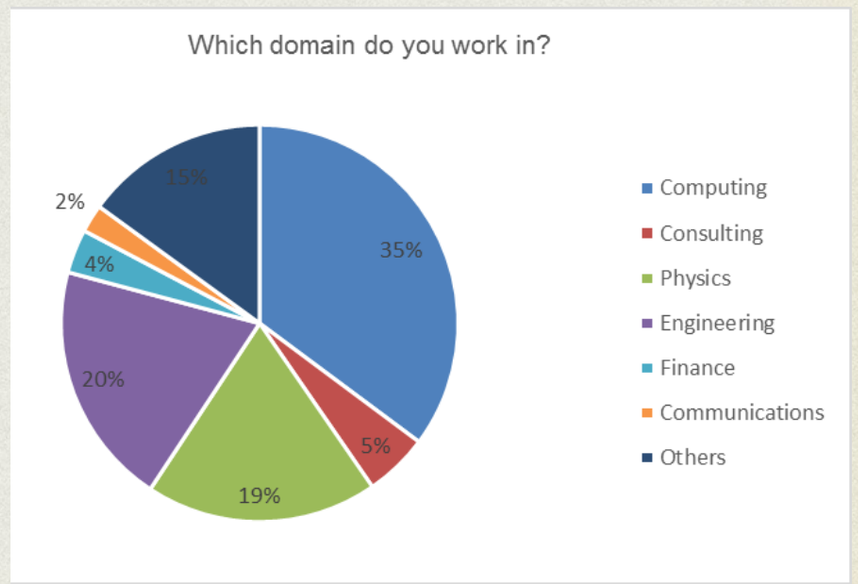
THE REAL IMPACT ON (FUTURE) SOCIETY



Today:
>3000 PhD students in LHC experiments

They do not all stay: where do they go?





TRAINING SEEN AS A VITAL ENGAGEMENT

CERN education activities

For young researchers
For physics/engineering students
For high school students
For school teachers

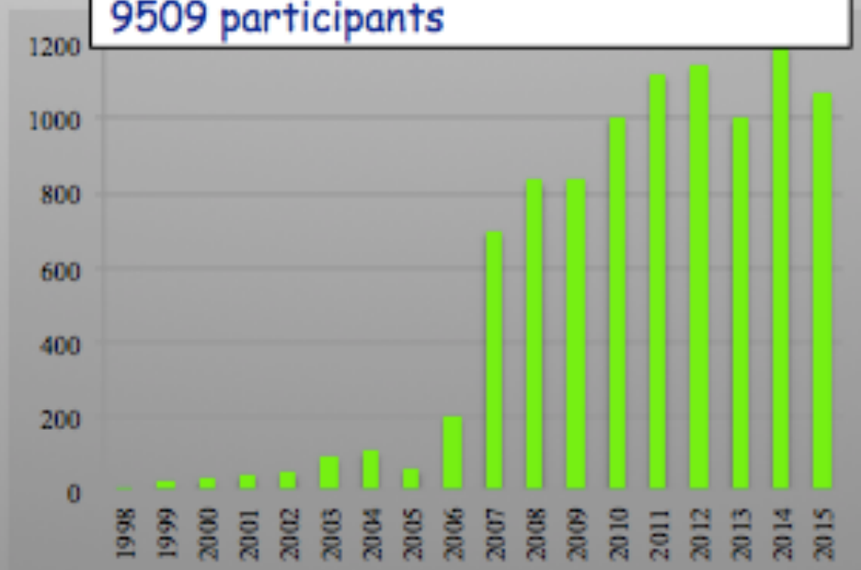
Europe/Russia School

Asia-Europe-Pacific School: Japan 2012, India 2014, China 2016

African School: South Africa 2010, Ghana 2012, Senegal 2014, Rwanda 2016

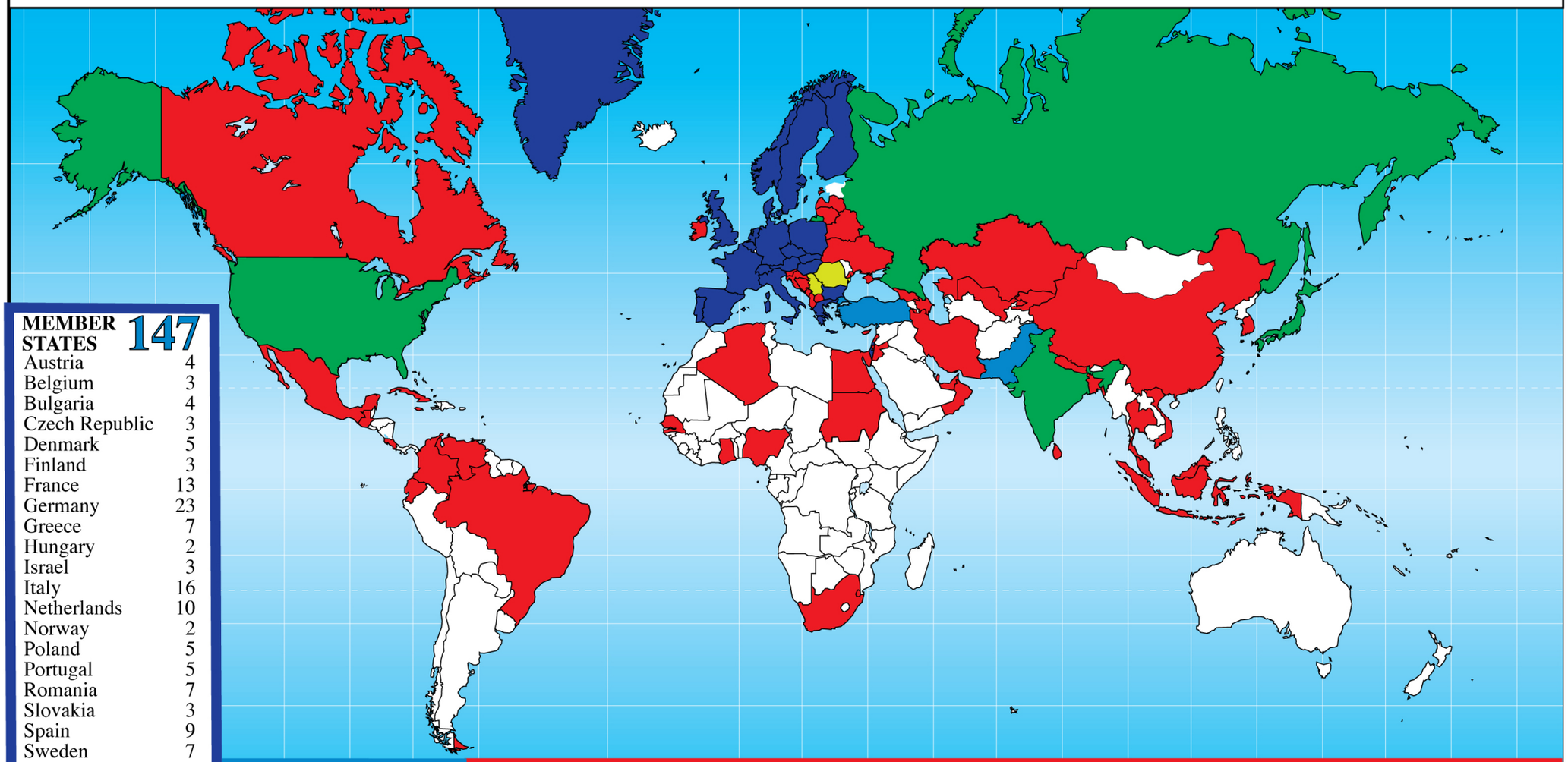
Latin American School: Brazil 2011, Peru 2013, Ecuador 2015

Teacher programme 1998-2015: total 9509 participants



A GENERATION OF BRIGHT YOUNG GUYS HAS A UNIQUE OPPORTUNITY TO SHARE A COMMON VISION OF SCIENCE AND OVERCOME CULTURAL DIFFERENCES

Summer Students 2016



MEMBER STATES 147

Austria	4
Belgium	3
Bulgaria	4
Czech Republic	3
Denmark	5
Finland	3
France	13
Germany	23
Greece	7
Hungary	2
Israel	3
Italy	16
Netherlands	10
Norway	2
Poland	5
Portugal	5
Romania	7
Slovakia	3
Spain	9
Sweden	7
Switzerland	3
United Kingdom	12

OBSERVERS 49

India	16
Japan	5
Russia	9
USA	19

ASSOCIATE MEMBERS 7

Pakistan	4
Turkey	3

CANDIDATES FOR ACCESSION 5

Serbia	5

OTHERS 97

Albania	1	Colombia	1	Indonesia	3	Lithuania	1	Qatar	1	Uzbekistan	1
Algeria	3	Costa Rica	3	Iran	2	Madagascar	1	Singapore	1	Venezuela	1
Azerbaijan	2	Croatia	2	Ireland	1	Malaysia	3	Slovenia	1	Viet Nam	1
Bangladesh	1	Cuba	1	Jamaica	1	Malta	4	South Africa	2		
Belarus	1	Cyprus	2	Jordan	2	Mexico	1	Sri Lanka	1		
Bosnia	2	Ecuador	1	Kazakhstan	1	Montenegro	2	Sudan	1		
Brazil	1	Egypt	4	Korea	1	Nepal	1	Thailand	3		
Canada	5	Georgia	1	Kyrgyzstan	1	Nigeria	2	T.F.Y.R.O.M.	3		
China	11	Ghana	1	Latvia	1	Oman	1	U.A.E.	1		
		Guatemala	1	Lebanon	2	Palestine	2	Ukraine	3		

NOT BY CHANCE BUT RATHER BY COMMITMENT AND HARD WORK CERN HAS BECOME THE LEADING SCIENTIFIC LABORATORY IN THE WORLD, A SITE KNOWN EVERYWHERE AND POINTED TO AS AN EXAMPLE (although actions very seldom follows the words), A DISPLAY OF WHAT INTERNATIONAL COOPERATION MEANS

ICTP

- by no means I will be able to go through ICTP merits with the same depth I did with CERN

- however you got by Fernando Q. a superb description of its activities

- so just a couple of points.....

THE MISSION

ICTP's mission is to:

- Foster the growth of advanced studies and research in physical and mathematical sciences, especially in support of excellence in developing countries.
- Develop high-level scientific programmes keeping in mind the needs of developing countries, and provide an international forum of scientific contact for scientists from all countries.
- Conduct research at the highest international standards and maintain a conducive environment of scientific inquiry for the entire ICTP community.

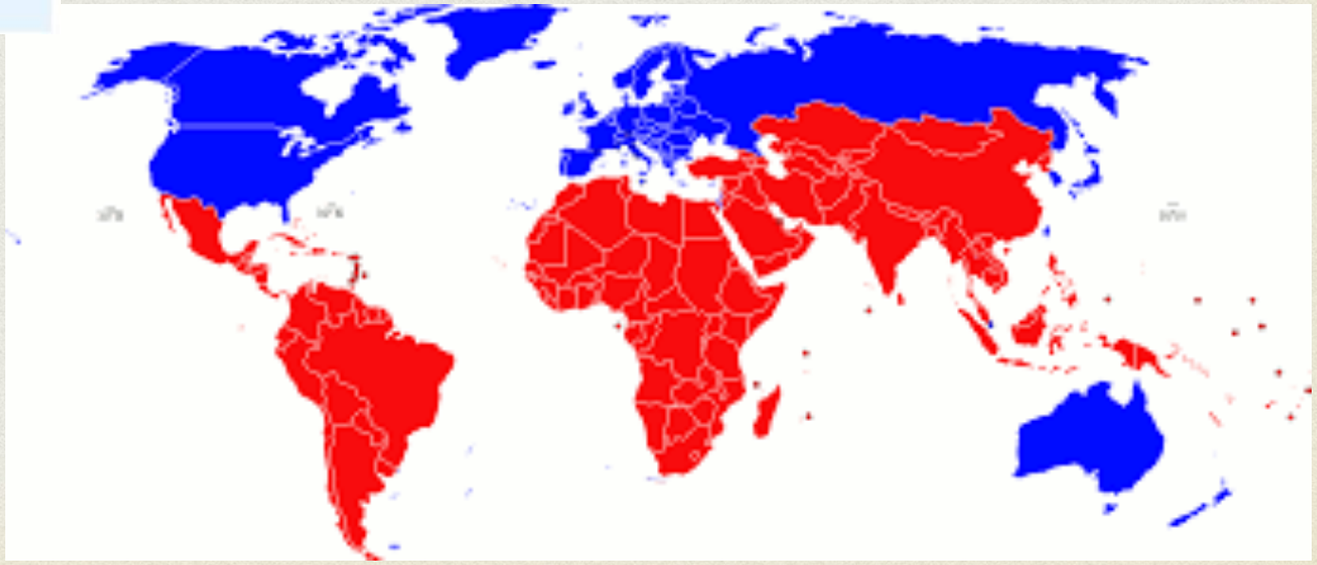
Thanks to the generous funding from the Italian Government, UNESCO and the IAEA, ICTP has been able to initiate and implement various schemes of support and assistance to scientists from developing countries.

Note that training, support of developing countries, point of contact go together with 'highest international standards' in science

THE SHIFT OF AXIS

from East -West

to South-North



THE CONTEXT OF ORIGIN

JUST TO MAKE YOU FEEL GUILTY.....A BIT

THE EVOLUTION

a propos

of North Korea

THE MEASURE OF SUCCESS

Alejandro Ceccatto (Argentina)

Rexhep Mediani (Albania)

Jean-Pierre Ezin (Benin)

ICTP educates people to contribute to improve their country

so success is measured by a metrics that is more complex that the one of CERN

AND THE MOST COMPLEX ADVENTURE OF ALL : SESAME

- A light source is a super microscope useful to many disciplines
- Science has a common language, is truly global and keeps away and refrain from undue influences
- The history of CERN can be repeated with the same hope of success. One extraordinary examples is contagious

AGAIN AN HISTORY OF VISION

AND PATIENCE AND PERSEVERANCE

Action plan for a collaborative programme in physics in the Middle East.

As part of the implementation of the collaboration agreement signed in Cairo on January 8th ,1995 under the auspices of H.E. Prof. Dr. Venice K. Gouda, Minister of State for Scientific Research of the Arab Republic of Egypt;

The members of the steering committee will be:

Prof. Daniele Amati, Prof. Franco Bonaudi, Prof. Alberto Devoto (Secretary), Prof. Eyal Bemary, Prof. Dr. Mohamed A. H. El Fiki, Mr. Ahmed El Ibiary, Prof. Sergio Fubini (Chairman), Dr. Hanna A. Hallak, Prof. Humam Ghassib, Prof. Eliezer Rabinovici, Dr. Edward Sader, and other eminent international scientists.

Prof. Dr. Mohamed Mokhtar El Halwagi
M-M. ElHalwagi
First Under-Secretary of State
Ministry of Scientific Research
of the Arab Republic of Egypt
Cairo, Egypt

Sergio Fubini
Prof. Sergio Fubini

Representative of the
Scientific Committee
for the Middle East
Workshop
Torino, Italy

Eliezer Rabinovici
Prof. Eliezer Rabinovici

Chairman
Racah Institute of Physics
Jerusalem, Israel

3

Memorandum of Understanding
to establish a
Condensed Matter, Environmental and High Energy Physics
Collaborative Research
in the Middle East

I. Introduction

Under the auspices of Prof. Dr. Venice K. Gouda, Minister of State for Scientific Research of the Arab Republic of Egypt, and as a continuation of the correspondence between representatives of: the National Research Centre (Cairo), the Racah Institute of Physics, Hebrew University of Jerusalem and the Physics Departments of the Universities of Cagliari and Torino, a working visit of Prof. Alberto Devoto (University of Cagliari), Prof. Sergio Fubini (University of Torino), and Prof. Eliezer Rabinovici (Hebrew University, Jerusalem) was held in Cairo on January 7 and 8, 1995. The Egyptian participants in these meetings were:

1. Prof. Dr. M.M. El Halwagi, First Under-Secretary, Ministry of State for Scientific Research of the Arab Republic of Egypt
2. Prof. Dr. Naiel Barakat, Professor of Experimental Physics, Ain Shams University
3. Prof. Dr. Sawsan Abdel Zaher, Head of Physics Division, NRC
4. Prof. Dr. Ahmed Fakhri, Research Professor, Atomic Spectroscopy, NRC
5. Prof. Dr. Mohamed Tag Eldin, Head, Theoretical Physics Dept., NRC
6. Mr. A.I. El-Ibiary, Legal Advisor for NIOF.

The purpose of the meetings was to outline practical ways for collaboration in the fields of Condensed Matter, Environmental and High Energy Physics within the context of the above-mentioned parties.

It was agreed that:
i) It is of great importance to strengthen the scientific relationships between the above-mentioned parties in the various fields of Condensed Matter, Environmental and High Energy Physics for the benefit of common human knowledge.
ii) The parties recognize that important scientific achievements in Condensed Matter, Environmental and High Energy Physics can only be achieved through meaningful and sincere collaboration between experts, independently of their nationalities.
iii) Training of young scientists and researchers is of major importance and all the involved Institutions have the responsibility of contributing to their training in Condensed Matter, Environmental and High Energy Physics.

For these reasons the above-mentioned Institutions will take the initiative in developing a fruitful collaboration both in research and training.

1

THE LANGUAGE OF SCIENCE IS UNIVERSAL, THE ONE OF POLITICS IS SLIGHTLY DIFFERENT

SESAME
IRAN

Home Page >> SESAME

- HOME
- SESAME PROJECT
- IRAN SESAME
- IRAN SESAME ORGANIZATION
- IRAN SESAME COMMITEE
- IR REPRESENTATIVES IN SESAME
- IRAN SESAME DOCUMENTS
- S & T ACTIVITIES
- SYNCHROTRON OF THE WORLD
- USEFUL LINKS
- CONTACT US

SESAME Members:

Countries including Iran, Jordan, the Zionist Regime, Turkey, Palestine and Pakistan under the umbrella of UNESCO were founding members of SESAME in 2002.
Countries such as Iran, Jordan, the Zionist Regime, Bahrain, Turkey, Palestine, Egypt, Pakistan and Cyprus are the current official members of SESAME and the request of Iraq to join the Council is on the table.

Israel, Iran, Jordan and Turkey join forces for multimillion-dollar science project

Each of the four countries has pledged $5 million toward the SESAME facility, which is being built near Amman.

Moshe Vigdor, who heads the Planning and Budgeting Committee of Israel's Council for Higher Education, said that without this agreement the project would have collapsed.

As for Iran's involvement, he said, "Science crosses borders and Israel participates in many international scientific forums that include Iran."

AS UNLIKELY AS IT COULD LOOK, IT GOES FORWARD

IT HAS ATTRACTED THE ATTENTION OF SEVERAL GOVERNMENTS AND SUPRANATIONAL INSTITUTIONS

- UE is contributing
- CERN is contributing
- other observers states are contributing
- I am proud of the Italian contribution

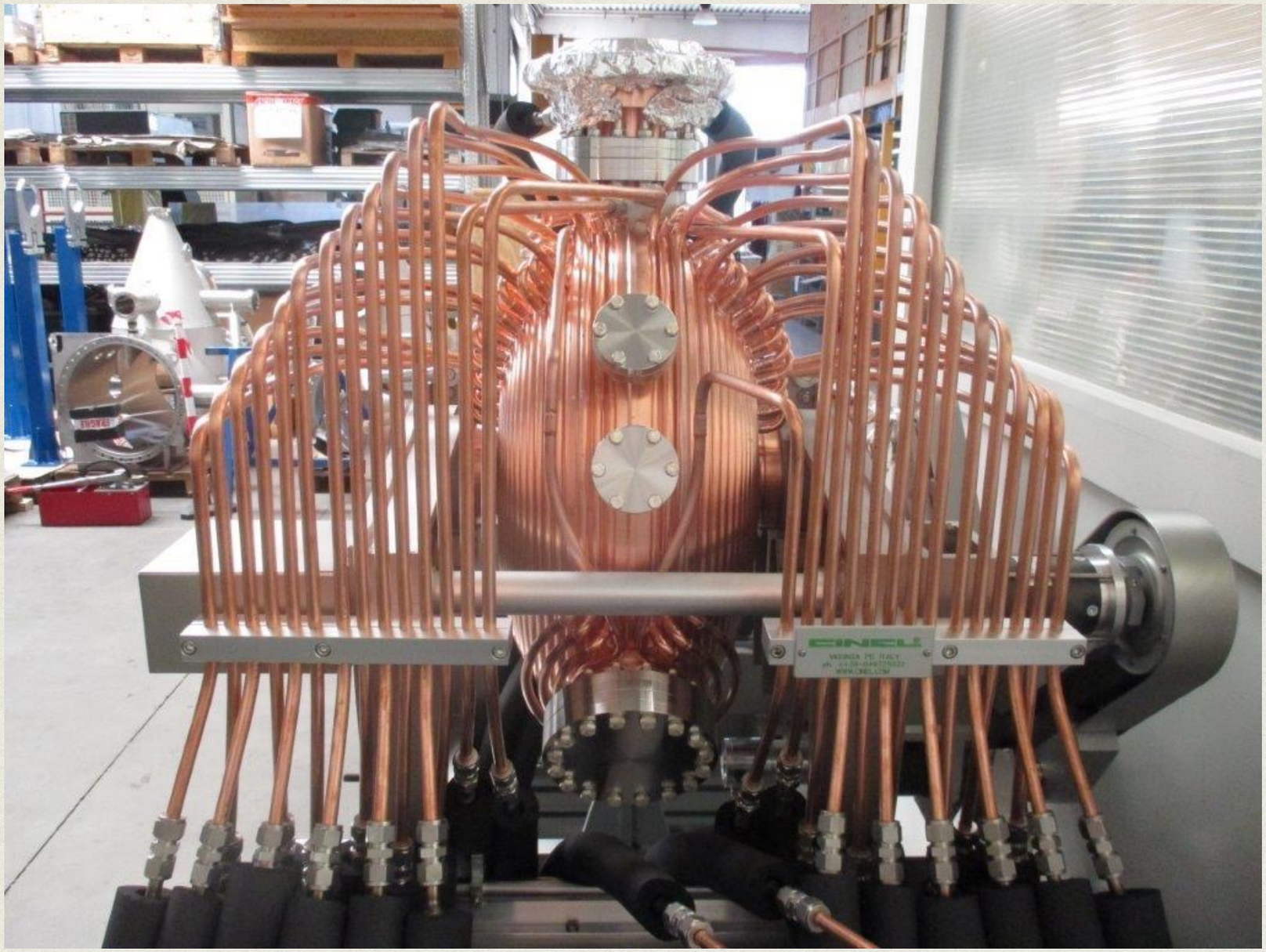
UE KNOWS SESAME WELL

ITALIAN CONTRIBUTION

- In 2013 Italian Ministry of Research (MIUR) accepted a proposal from INFN for giving a contribution to the construction of SESAME based on the expertise of INFN on accelerators and detectors and the existence in Italy of light source (ELETTRA) similar to it.

- The contribution was determined to be 5 MEuro diluted in a couple of years (2.8 given so far)

CONTRIBUTION IN KIND



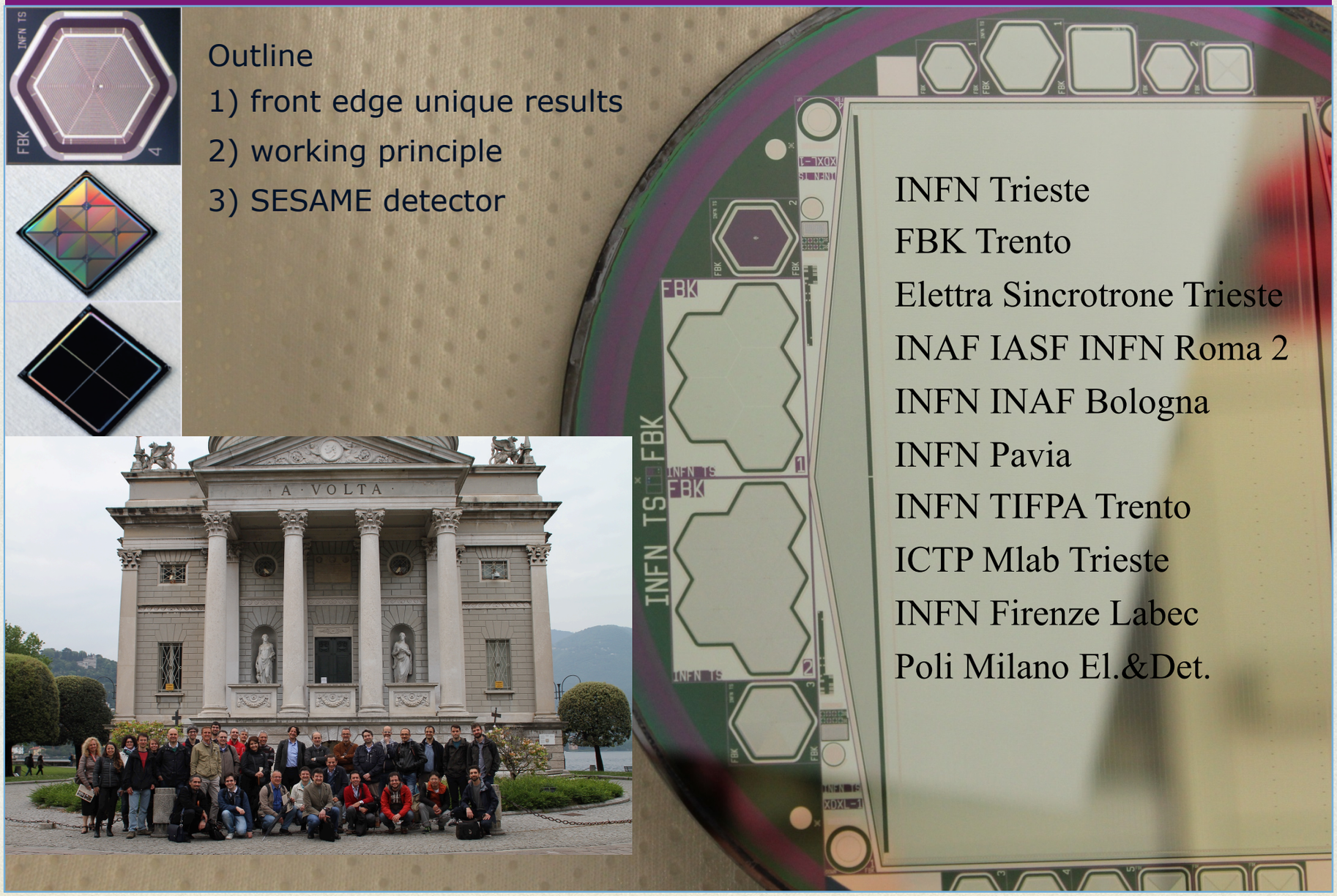
The 4 resonant cavities. The heart of the accelerator. Those who gives the electrons the energy to go around so that they can produce the precious photons used by the experimenters.

AND FOR HELPING THE EXPERIMENTERS

A INFN collaboration specialized in the development of state of the art Silicon Drift Detectors will carry out the work for SESAME

Outline

1) front edge unique results
2) working principle
3) SESAME detector



INFN Trieste
FBK Trento
Elettra Sincrotrone Trieste
INAF IASF INFN Roma 2
INFN INAF Bologna
INFN Pavia
INFN TIFPA Trento
ICTP Mlab Trieste
INFN Firenze Labec
Poli Milano El.&Det.

AND WE ARE WORKING ON THE FRONT OF CIVIL CONSTRUCTION FOR PROVIDING SESAME WITH AN HOSTEL

- Excellent science is a necessity for every region of the world
- Science put easily together people coming from very different countries
- SESAME is an example how these two things can happen in reality
- I FEEL THAT WESTERN COUNTRIES (LIKE MINE) HAS TO GENEROUSLY SUPPORT THIS ADVENTURE

CONCLUSION

- first you need people with a vision
- then you need a bottom up approach that involves a community
- you should not compromise on the quality of the science
- unfortunately it is easier to carry on these enterprises in difficult times and in presence of crises
- However history (the only reliable judge) says that IT WORKS