SESAME: A PERSONAL VIEW

ELIEZER RABINOVICI

FORMER VICE PRESIDENT SESAME

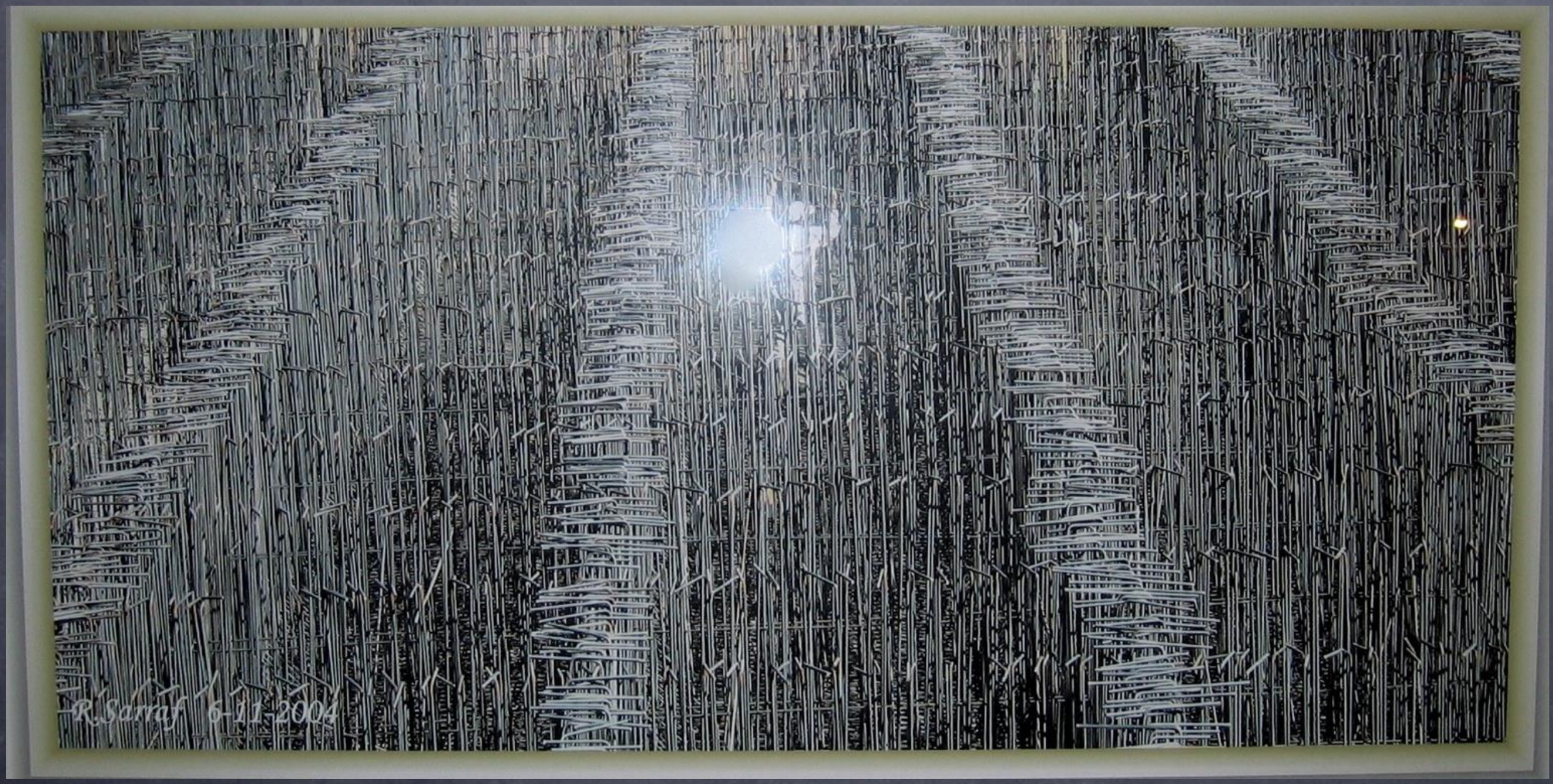
RACAH INSTITUTE OF PHYSICS

HEBREW UNIVERSITY, JERUSALEM

ISRAEL

LOSINJ/LUSSINO –PAOLO BUDINICH

30th AUGUST 2016


R.Sattar 6-11-2004

I: Forming Real Dreams Introduction-Concepts

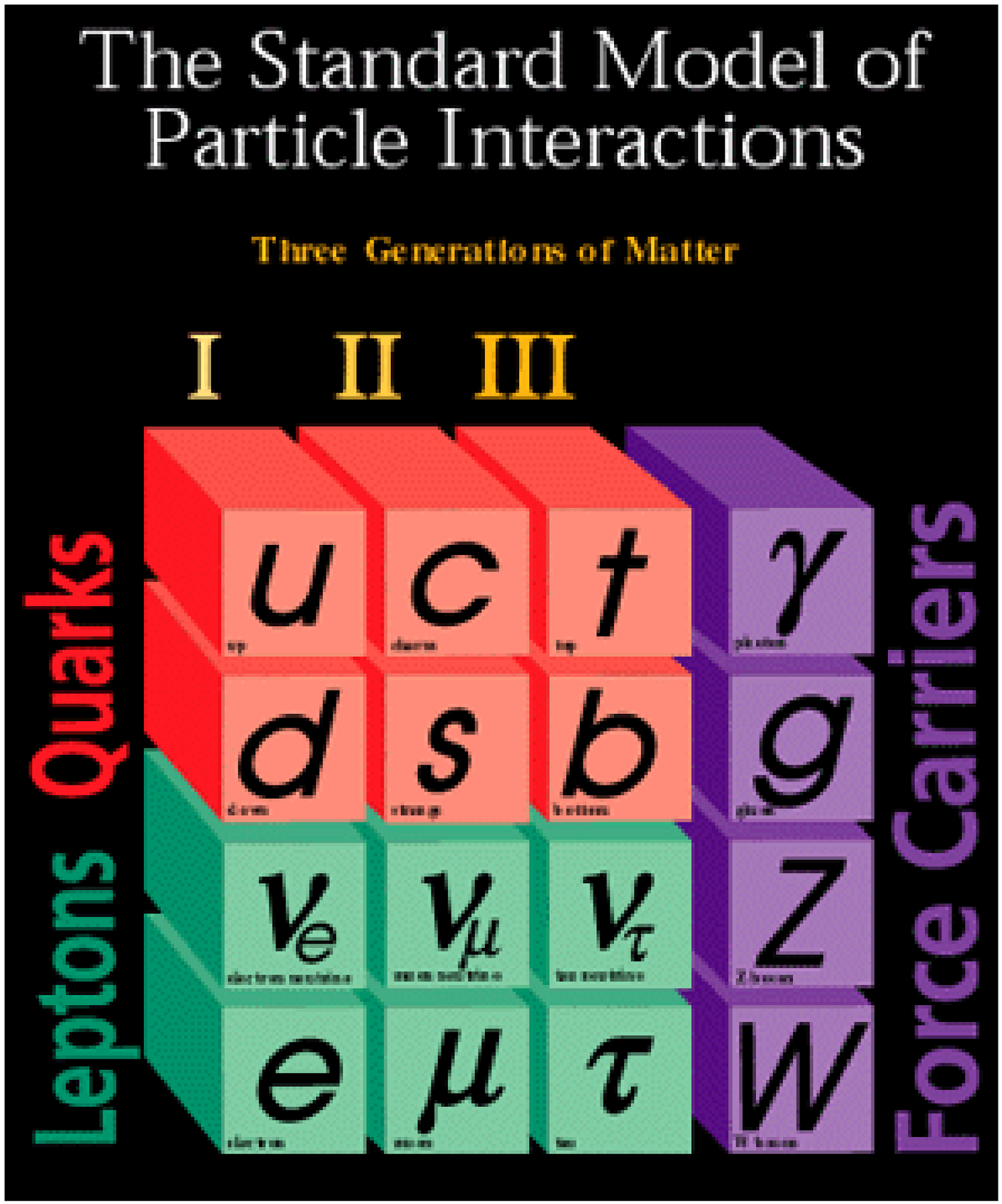
CERN-LHC

27km circumference-100m deep largest in the world


SESAME
06.03.2015

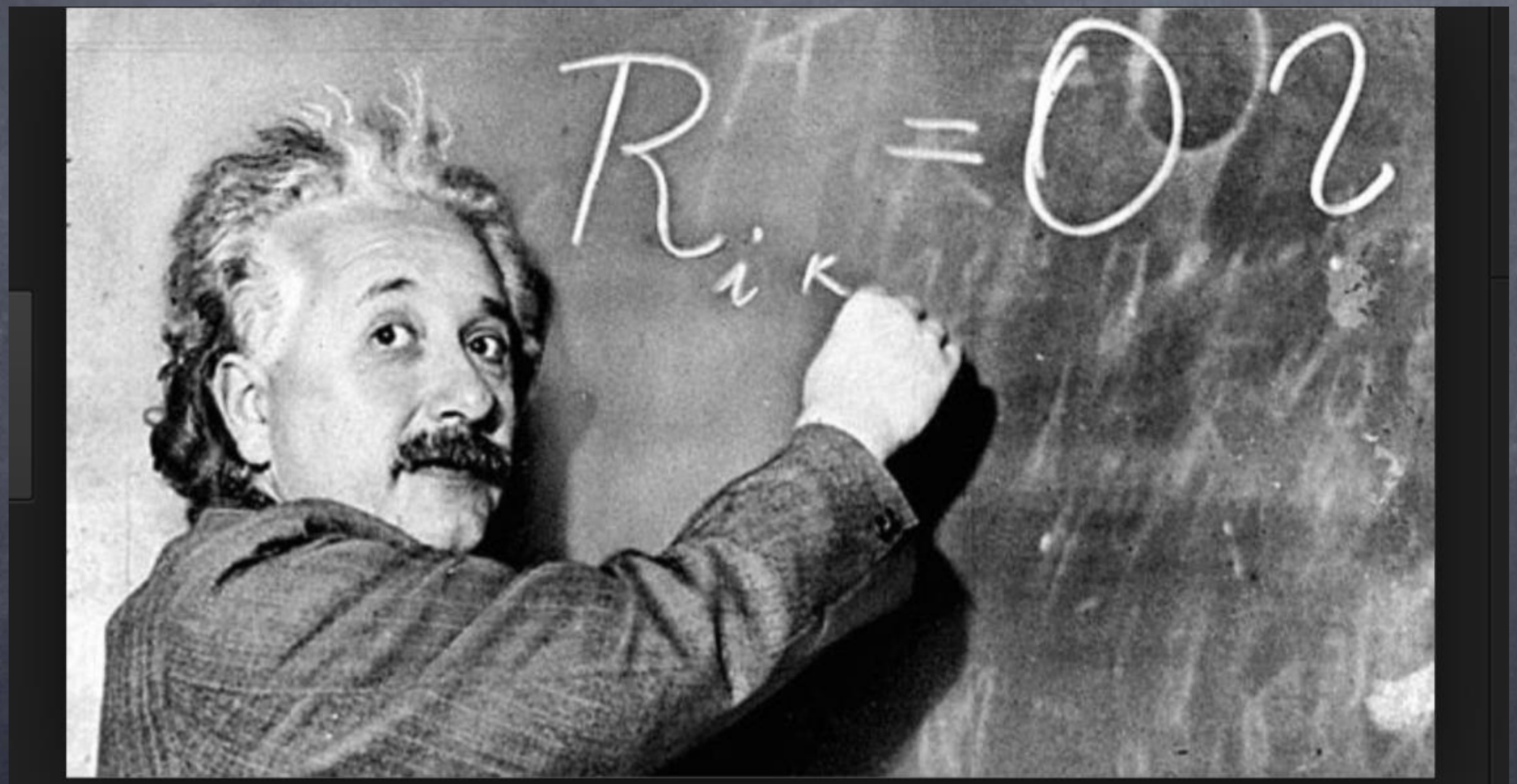
Sesame-Light Source 75x75m-Tens in the World

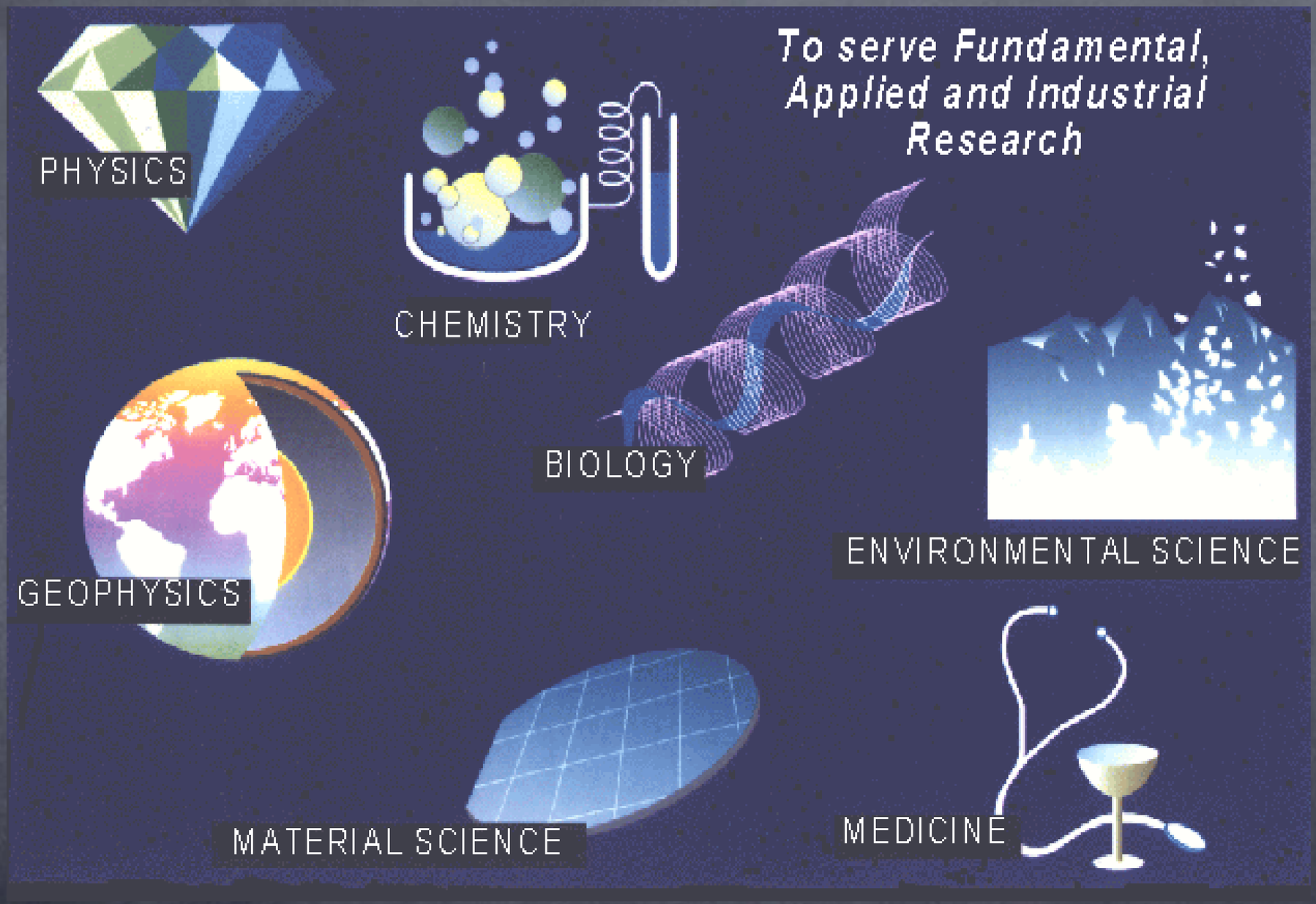
- What is Special about it?


The Standard Model of Particle Interactions
Three Generations of Matter
I
II
III
Quarks
Leptons
Force Carriers
u
c
t
γ
d
s
b
g
ν_e
ν_μ
ν_τ
Z
e
μ
τ
W

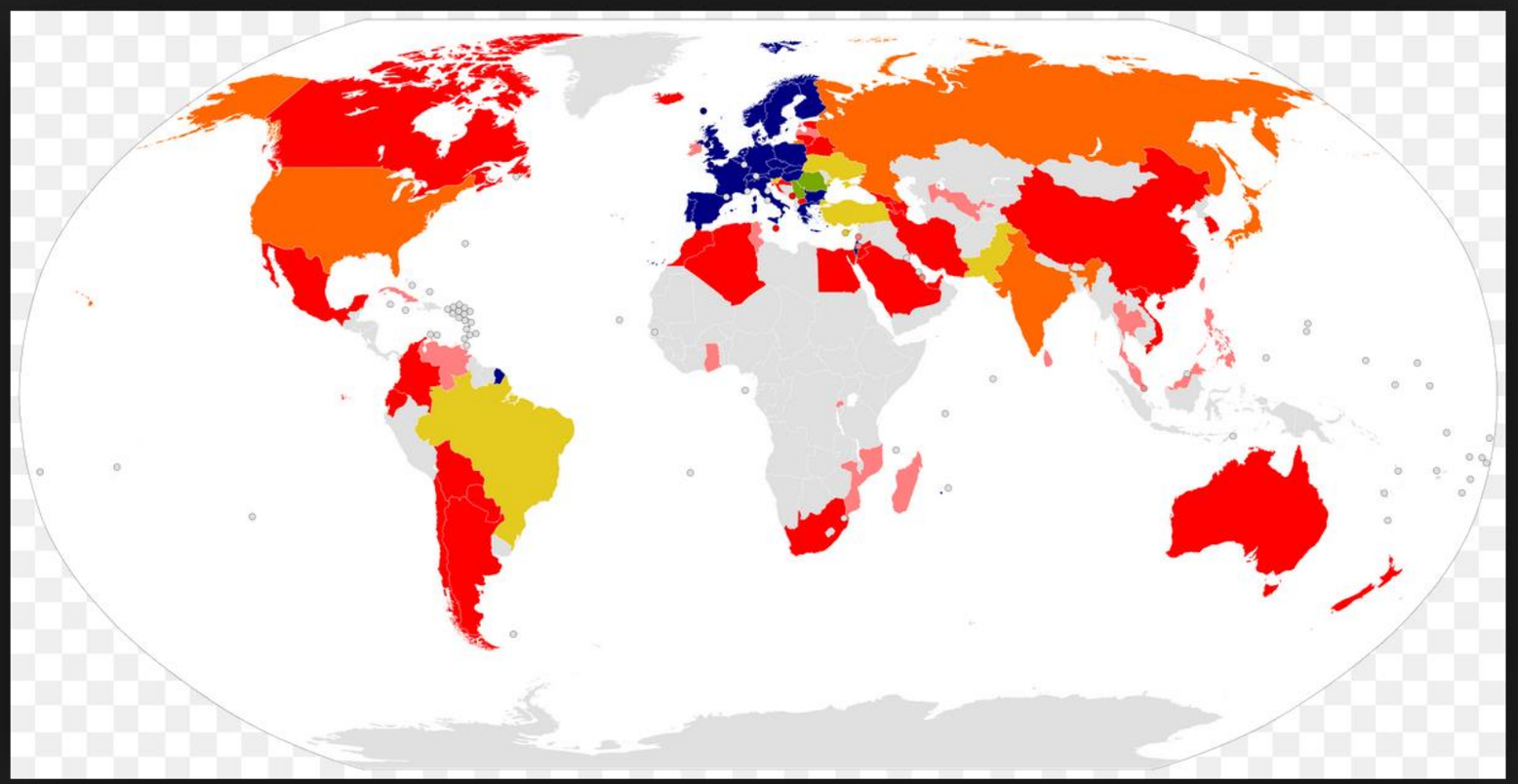
$$\mathscr{L}'_0 = \bar{\psi} i\gamma^\mu (\partial_\mu + ieA_\mu)\psi - m\bar{\psi}\psi .$$

$$\mathscr{L} = (\mathrm{D}_\mu \phi)^\dagger (\mathrm{D}^\mu \phi) + \mu^2 \phi^\dagger \phi - \lambda(\phi^\dagger \phi)^2 - \tfrac{1}{4} F_{\mu\nu} F^{\mu\nu}$$


R. = 0


To serve Fundamental, Applied and Industrial Research
PHYSICS
CHEMISTRY
BIOLOGY
ENVIRONMENTAL SCIENCE
GEOPHYSICS
MATERIAL SCIENCE
MEDICINE

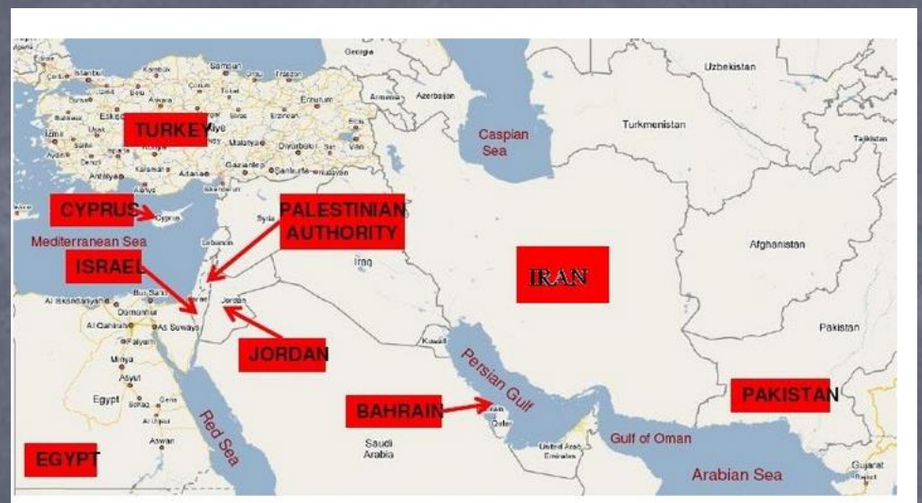
Cern Members



Member States of CERN:

Austria, Belgium
the Czech Bulgaria,
Denmark Republic,
France Finland,
Germany,Greece,Hungar
y
the Italy Israel
Norway Netherlands
Poland
the Slovak Portugal
Spain Republic
Sweden
Switzerland
the United Kingdom

Rumania memebr,
Cyprus, Serbia on the way
Pakistan,Turkey are Associate
EU, India, Japan, JINR,Russia,
UNESCO, USA Are Observers



SESAME Members

The current Members of SESAME are Bahrain,Cyprus, Egypt, Iran (Islamic Republic of), Israel, Jordan, Pakistan, the Palestinian Authority, and Turkey.

Current Observers are Brazil, China (People's Republic of), the European Union, France, Germany, Greece, Italy, Japan, Kuwait, Portugal, Russian Federation, Spain, Sweden, Switzerland, the United Kingdom, and the United States of America.

Why Science?

Why “US”?

Together –Science as a Bridge

BBC DAVID SHUCKMAN

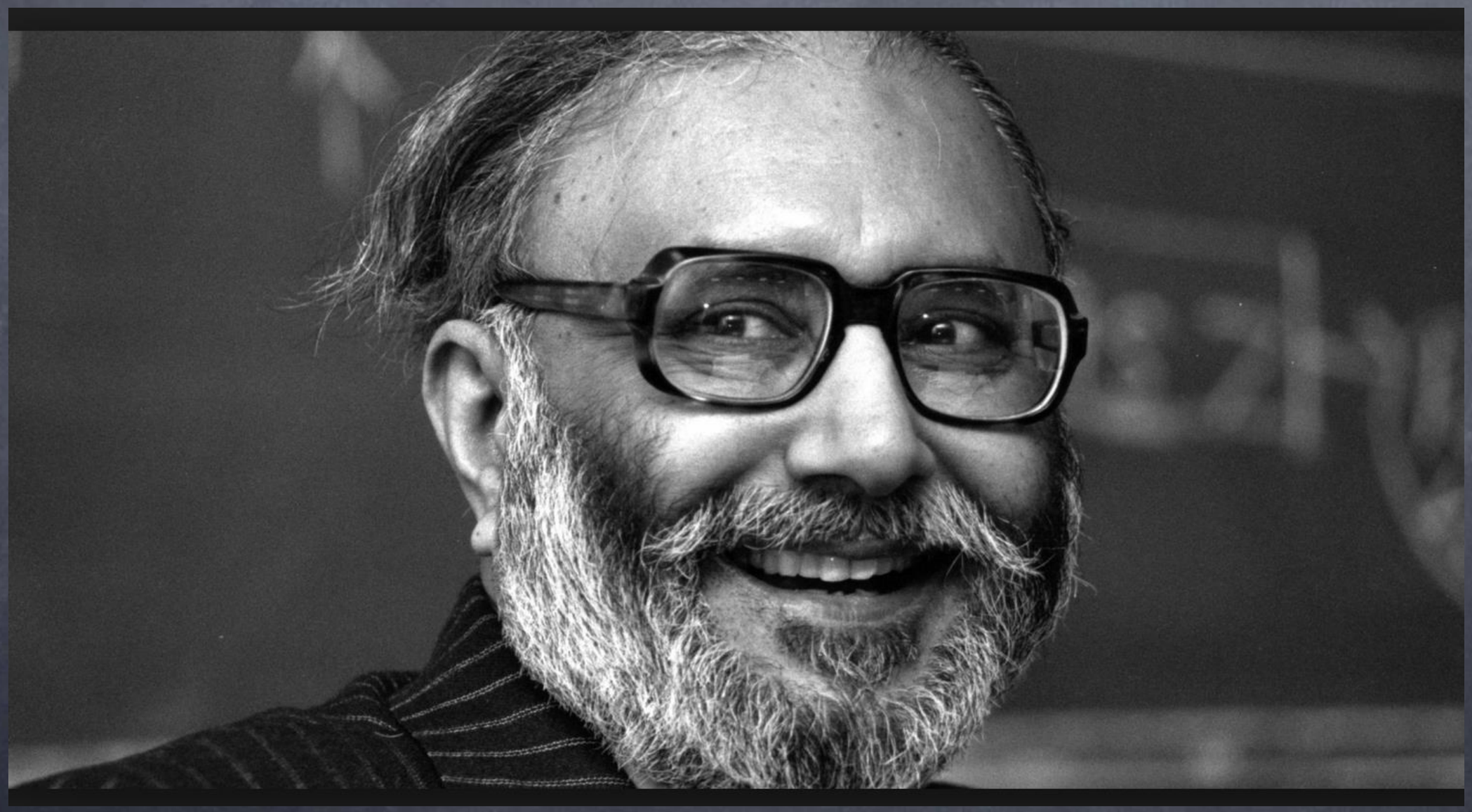
PHOTOS FROM THE JOURNEY

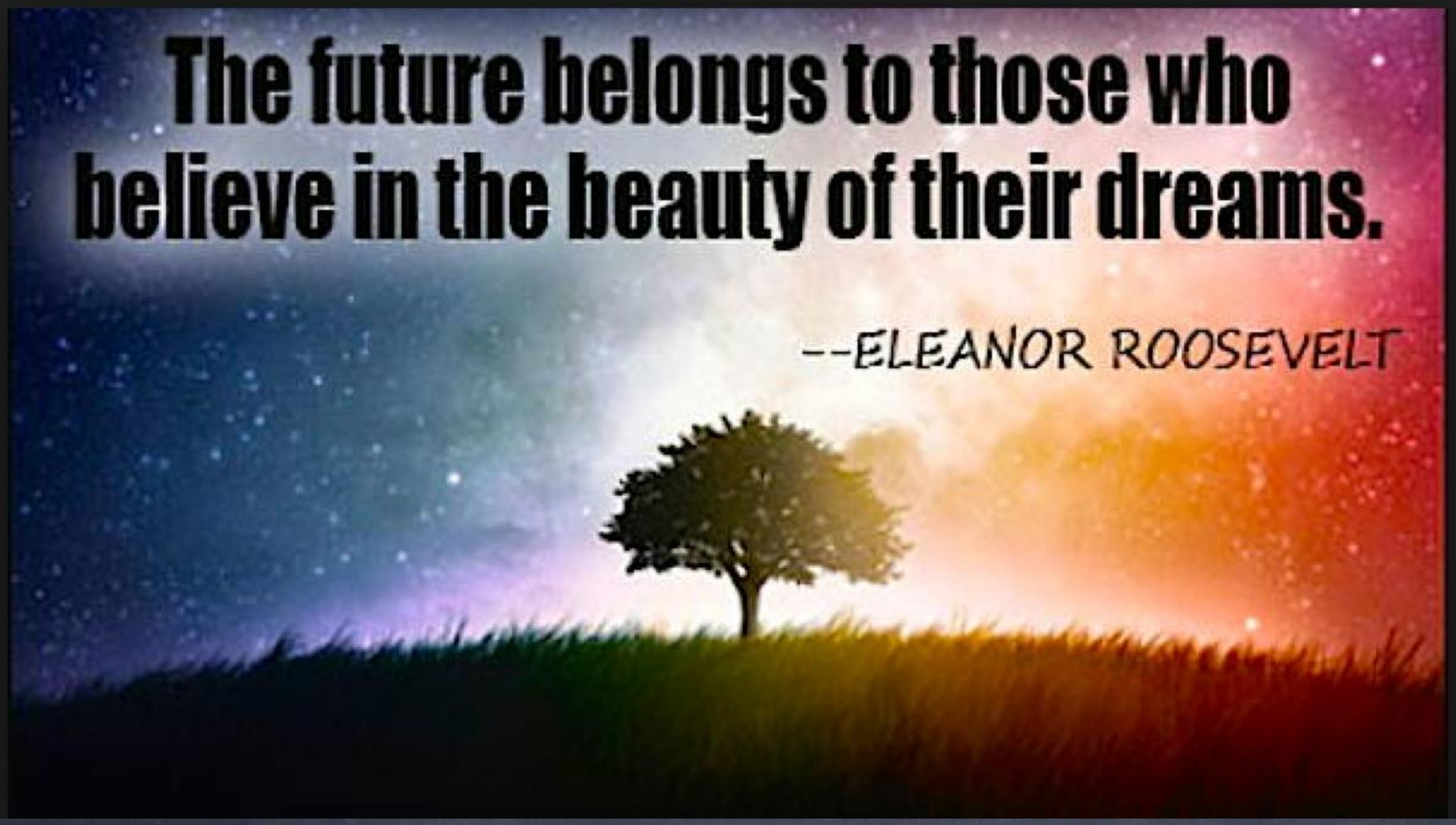
Girders and Dipoles at SESAME Site Before Assembly

Source of the photo: © SESAME | One cell of the main storage ring installed in the shielding tunnel in the experimental hall with (left to right) Maxime Dumas (CERN), Maher Shehab, Erhard Huttel and Mohamed Khalileh (SESAME) and Carlos Lopez (CERN)

How did we reach there?

ICTP-ABDUS SALAM MEMORIES - VISIONS




The future belongs to those who
believe in the beauty of their dreams.
--ELEANOR ROOSEVELT

- SUCH BEAUTIFUL DREAMS ARE RARE AND
- COME FREE
- ACTUALIZING THEM IS WHERE THE WORK IS.

Kind of Unique

- High quality scientists
- High quality science
- Dedication

Some Israeli scientists

- Prof. M. Duetsch
- Prof. Paz-Pasternak
- Prof. E. Rabinovici

- Prof. Roy Beck
- Prof. Jacob Klein
- Dr. Uri Raviv
- Prof. I. Sagi
- Prof. Y. Sussman
- Prof. D. Tawfik
- Prof. A. Yonat

SCIENCE FOR PEACE 101

SCIENCE FOR PEACE 101-INFINITE

Hope
Index

SESAME

Time

DAHAB

Top

Bottom

Small Science?
Good Science!
Compromise
Big Science?

NO !!! COMPROMISE ON GOOD SCIENCE

Principle:

Each Side Can Contribute

Each Side Can Benefit

-

It is all…PERSONAL

SYMMETRY & SIMPLICITY IN PHYSICS

A SYMPOSIUM
ON THE OCCASION
OF
SERGIO FUBINI'S 65th BIRTHDAY

Editors
W M ALBERICO & S SCIUTO
Dipartimento di Fisica Teorica, Universitá di Torino
via Giurial, Torino, 10125, Italy

World Scientific
Singapore • New Jersey • London • Hong Kong

MINIREVIEW OF SEVERAL NEW ASPECTS OF STRING THEORY UNCOVERED SINCE 1986

Eliezer RABINOVICI
Racah Institute of Physics
The Hebrew University of Jerusalem
Givat Ram, Jerusalem 91904, Israel

The first time I have seen Sergio Fubini was while listening to a seminar he gave at Cern in 1979. He was describing ideas on how to view the gravitational constant as a vacuum expectation value of some field. At the beginning of the talk he issued a warning to those he called "young people". He stated that any one of them who will start studying quantum gravity will continue to do it as long as he does research. As you see he had left an escape clause for himself. The others could not claim they were not forewarned and maybe the warning should be put in writing. My first actual meeting with Sergio was in a Cern corridor, I was, as I am now, willing to consider any idea which would teach us about the spontaneous breakdown of symmetry between "micro" and "macro" dimensions. I told him about a recent preprint by D'Hoker and Jackiw in which they describe a mechanism for the spontaneous breaking of translational invariance and of the ideas C. Bernard and B. Lautrup and myself had on the subject. He very gently suggested that ideas he had had in the past may be useful in setting the context of the particular problem at hand. Needless to say that his paper on the possibility of spontaneous breaking of Lorantz invariance in a conformal system made available a whole new set of his original ideas.

I would like to take advantage of Sergio's patience to listen to questions and include in this mini review a set of questions pertaining to our attitudes in string theory.

It is about ten years since a large part of the particle physics community has reexamined the possibility that the elementary constituents of matter are string like rather than particle like. An impressive amount of new information was obtained on string theory, many issues are yet to be understood. Below follows a partial list of such aspects.

WHY	WHAT, HOW
why string	what strings, what particles
	what stringy symmetries
why only strings	what else is possible
why a scale	
why four macroscopic dimensions	
why supersymmetry	how to break sypersymmetry

ARAB-ISRAELI SCIENTIFIC COLLABORATION: FIRST BUDS

Eliezer RABINOVICI
Racah Institute of Physics
The Hebrew University of Jerusalem
Givat Ram, Jerusalem 91904, Israel

It is a great pleasure and honor to attend this Symposium on the Occasion of Sergio's Fubini 65th birthday, here at the Accademia della Scienze in Torino. I have been asked to give a survey on aspects of Arab-Israeli scientific collaboration. I have collected a few pieces of information which I will present to you; it should be realized, however, that I am not an expert on the subject and I do not know how complete the information is (Figure 1).

To set the perspective let us first consider the regional map* which includes many Arab states and Israel.

Next are presented some statistics concerning the number of students in some Arab states and Israel and the number of faculty members in the corresponding countries (the statistics on the Arab states are from "The Development of Higher Education In Seven Arab Countries, 1965-1988" by Prof. G. Gilbar).

The first Arab-Israeli scientific relations were established between Egypt and Israel. The Egypt-Israel peace accord contains among its many complex annexes a short one in which both sides take upon themselves to establish cultural relations. This serves as the basis for the Scientific Relations. The spirit in which both sides view such relations can be exemplified by the section in a memo of understanding regarding collaborative research in marine sciences presented below.

This is so evident and yet it took so long to state.

These noble principles cannot be implemented without funding. The main source of funding has been the USA; I have obtained an estimate that 7 million dollars have been directed to foster scientific collaboration through AID (Agency for International Development). There has also been available a much smaller amount of support from Egyptian and Israeli sources. The areas of research to which this funding has been directed include: Agriculture(•), Marine Sciences(•), Health(•), Energy, Arab and Hebrew Literature and Languages. On a more applied science basis there have been contacts between Arab states and Israel regarding computer software, seeds for agriculture and irrigation methods. The output of such efforts consists of solutions of concrete scientific problems, the enrichment of knowledge of human relations and of course ...scientific papers. An example of a page of such a paper on a problem in agriculture is presented below.

---

* boarders according to Oxford Atlas.

(•) In these projects it is planned the Palestinian scientists join as well.

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.

IV. Finance

In order to develop a long-term collaboration, the parties agree to prepare joint research projects to be submitted in the near future to International funding agencies and World Organizations.
The parties agree not to delay the actual collaborative activities until the approval of the above-mentioned research projects and agree to start the collaborative work with the available funds.

To this end:

a) Travel expenses, accommodation and per diem of Egyptian and Israeli scientists invited to courses and scientific activities in the Italian Institutions will be taken care of by the Italian Institutions.
b) The Egyptian side will provide accommodation for Israeli and Italian Scientists invited to stay at Egyptian Institutions, within the scope of joint reserach collaboration (this does not include the International meeting mentioned under item III(c), for which special funding arrangements will be sought).
c) Travel expenses, accommodation and per diem of Egyptian and Italian scientists and students invited to courses and scientific activities at the Racah Institute will be taken care of by the Israeli Institute.

In summary, the above-mentioned Institutions consider this agreement as a sound base for collaboration in both research and training.

Signed in Cairo on January 8, 1995, in three originals in English.

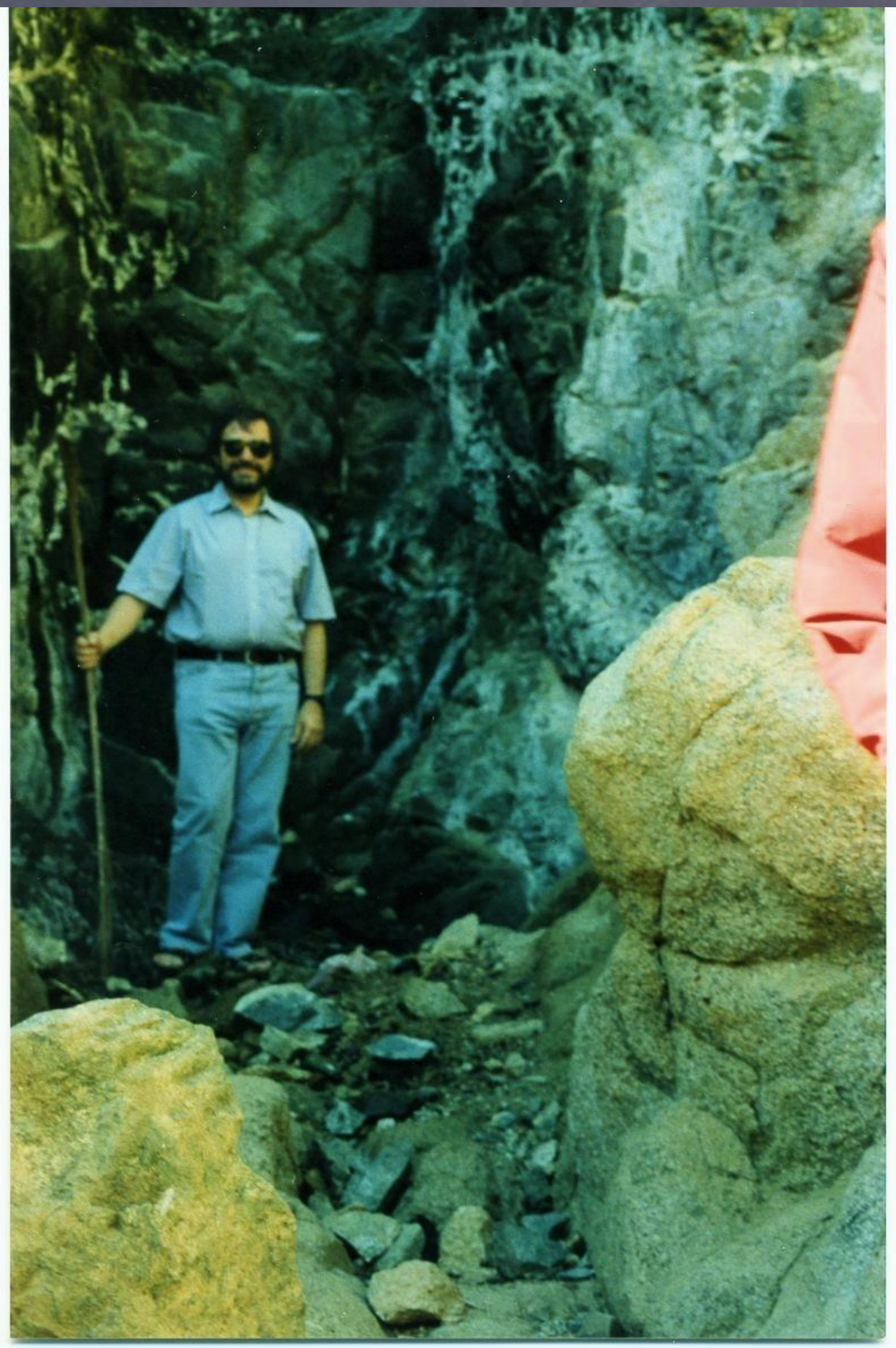
Prof. Dr. Mohamed Mokhtar El Halwagi
M. M. El Halwagi
First Under-Secretary of State
Ministry of Scientific Research
of the Arab Republic of Egypt
Cairo, Egypt

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



INTERNATIONAL ATOMIC ENERGY AGENCY
UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION
INTERNATIONAL CENTRE FOR THEORETICAL PHYSICS
I.C.T.P., P.O. BOX 586, 34100 TRIESTE, ITALY, CABLE: CENTRATOM TRIESTE

Trieste, July 20, 1995

Prof. S. Fubini
Chairman of the
Scientific Commitee for the Sinai School of Physics,
Universita di Torino
Torino, Italy

cc: Prof. G. Denardo
Prof. A. Devoto
Prof. E. Rabinovici

Dear Prof. Fubini,

I'm happy to let you know that the ICTP has decided to grant a special contribution of 22,000 $ for the organization of the "Sinai Meeting on High Energy Physics, Condensed Matter and Environmental Physics" to be held in Dahab (Egypt) from 19 to 26 November 1995.

This contribution will be given to the Organizing Committee at its address in Israel.

Yours sincerely,

Miguel A. Virasoro
ICTP Director

DANIELE AMATI- SISSA/CERN

Gallieno Denardo ICTP

SINAI MEETING ON HIGH ENERGY, CONDENSED MATTER AND ENVIRONMENTAL PHYSICS

19-26 November 1995
Dahab, Sinai Peninsula, Egypt

****

Under the auspices of:
ICTP
CERN, UNESCO
Egyptian Ministry of Scientific Research
The Israel Academy of Sciences and Humanities
Istituto Italiano per gli Studi Filosofici
Istituto Nazionale di Fisica Nucleare (INFN)
The Higher Council for Science and Technology, Amman
National Research Centre, Cairo
National Institute of Standards, Cairo
The Hebrew University, Jerusalem
Bethlehem University
International School for Advanced Studies (SISSA), Trieste
University of Cagliari, University of Napoli, University of Torino

****

This International Meeting has been planned with the aim of bringing together experts in these very active fields of research and putting them in contact with young researchers from the Middle East and from the whole Mediterranean area in a spirit of co-operation and friendship. The meeting is going to be a starting point for further similar encounters in this area. A limited number of young researchers from each country will be admitted. The participation of senior researchers is very important, so the only limitation on their number will be the available room at the meeting site.

The meeting will consist of a series of lectures, a set of seminars and demonstrations, and there will be ample time for discussions and for sessions of questions and answers.

Following is the list of the topics of the mini-courses and their organizers:

1) *Particle- and Astrophysics*, M. Jacob and G. Veneziano;
2) *Superconductivity (Physics and Applied Technology)*, A. Barone and F. Bonaudi;
3) *Spontaneous Symmetry Breaking*, R. Jackiw;
4) *Non-Abelian Gauge Theories*, E. Rabinovici;
5) *Environmental Physics*, G. Furlan.

There will be seminars by:

L. Alvarez-Gaumé, *Anomalies*; M. Assad Abdel-Rauf, *Theory of Four-body Systems: Rigorous and Variational Proofs of the Possible Coexistence of Atoms and Antiatoms*; M. Berry, *Geometric Phases*; E. Brézin, *1/N Expansion*; H.B. Ghassib, *Gauge Theoretic Description of Superconductivity*; R.B. Laughlin, *Particle Physics in Miniature: the Emulation of Quarks and Gluons by Quantum Antiferromagnets*; E. Rabinovici, *Dualities in Physics*; M. Virasoro, (to be announced); E. Witten, (to be announced).

****

International Scientific Advisory Committee

Abdus Salam and Victor F. Weisskopf (Honorary Chairmen)

L. Alvarez-Gaumé (CERN), M. Assad Abdel-Rauf (Ain Shams U., Cairo), J.J. Atick (Rockefeller U.), A. Barone (U. of Napoli), M. Berry (U. of Bristol), F. Bonaudi (INFN, Torino), E. Brézin (Ecole Normale Supérieure), N. Cabibbo (ENEA and U. of Roma), A. Devoto (U. of Cagliari), S. Fubini (Chairman - U. of Torino), G. Furlan (U. of Trieste), H.B. Ghassib (U. of Jordan, Amman), R. Jackiw (MIT), M. Jacob (CERN), R.B. Laughlin (Stanford U.), F. Nicodemi (U. of Napoli), E. Rabinovici (Hebrew U., Jerusalem), S. Sciuto (U. of Torino), G. Veneziano (CERN), M. Virasoro (ICTP), E. Witten (IAS, Princeton).

****

Local Organising Committee

M.M. El Halwagi (Ministry of Scientific Research, Cairo), M. El-Fiki (NIS, Cairo), M. El-Raey (U. of Alexandria), M.S. Shalan (NIS, Cairo), M. Fakhri (NRC, Cairo), M.S. El-Wahab (Ain Shams U.), M.A. Sadky (NIS, Cairo), A.I. El-Ibiary (Ministry of Scientific Research, Cairo), M. Tag El-Din Kamal (NRC, Cairo).

****

For further information please write to:
A. Devoto
Dipartimento di Scienze Fisiche
Via Ospedale, 72
09124 CAGLIARI (Italy)
FAX: (39) (70) 666126
E-mail: DEVOTO@CAGLIARI.INFN.IT **OR** E-mail: DIRECTOR@ictp.trieste.it

August 1995

****

ıspices of:
P
NESCO
Scientific Research
ıences and Humanities
gli Studi Filosofici
sica Nucleare (INFN)
e and Technology, Amman
ı Centre, Cairo
Standards, Cairo
rsity, Jerusalem
Jniversity
ced Studies (SISSA), Trieste
of Napoli, University of Torino

****

*

CERN COURIER

INTERNATIONAL JOURNAL OF HIGH ENERGY PHYSICS

VOLUME 36 1 JANUARY/FEBRUARY 1996

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;

In the spirit of the agreement to promote co-operative work in fields that have impact on peoples' lives and standards of living, facilitating the use of equipment and expertise to support and collaborate in the ongoing peace process;

As a consequence of fruitful discussions among scientists of the Middle East held during a successful meeting in Dahab, Sinai from November 19 to November 26, 1995 under the chairmanship of Professor Sergio Fubini, acting also as delegate of the Minister of University and Scientific and Technological Research of Italy, attended by 125 scientists: American, Argentinian, British, Egyptian, French, German, Israeli, Italian, Japanese, Jordanian, Moroccan, Palestinian, Spanish, and honoured by the presence of Prof. Dr. Venice K. Gouda, Minister of State for Scientific Research of the Arab Republic of Egypt, Prof. Jacob Ziv, President of the Israel Academy of Science and Humanities, Prof. Miguel A. Virasoro, Director of ICTP and Dr. Adnan Badran, Deputy Director-General of UNESCO;

It was decided:

-To create a "Steering Committee for International Collaboration in the Middle East on Basic and Applied Physics" under the auspices of UNESCO, ICTP and the Italian government.

The tasks of this committee will be:

1. To promote collaboration between scientists in Egypt, Israel, Italy and other scientists in the region; to identify research groups with common interests and to facilitate research collaboration and the exchange of scientists and students;

2. The committee will initiate, promote and support other meetings and regional Schools of Physics. The next School is planned to take place in Jerusalem and Bethlehem in May 1996, on the subject of the Physics of Detectors.

3. The establishment of a computerized data base of regional scientific and educational activities for the benefit of all students and researchers in the area, with a view to connecting the institutions and groups active in research and education.

A. Bellini
A.B.

H.B.
G.

E. Rabinovici

First Bulletin

Seminar on

Experimental Techniques in High-Energy and Synchroton Radiation Physics

Villa Gualino, Torino, Italy
31 October - 5 November 1996

1. PURPOSE

The aim of the present Seminar is to review modern experimental techniques in accelerator-based physics research. Even though research objectives in the various fields of science that use accelerators can be very different, the problems encountered when employing and developing particle and radiation detectors for experimental work have many aspects in common. This condition leads to cross-fertilization in the area of instrumentation research between these fields. Furthermore, the development of new particle detection and accelerating methods is continuously leading to new technical applications outside the area of pure physics research, like in medicine, biology and industry, eventually having a positive impact on peoples' lives and standard of living.

Owing to their large size and cost, new accelerators tend to become unique facilities within large regions or even within the world. Utilization of these facilities by researchers from different parts of the world should be facilitated. Application to participate in the present seminar is open to Ph.D. students and researchers from any country. The procedure to apply for an invitation is indicated below. There is no fee for participation in the Seminar.

For Egyptian, Israeli, Jordanian and Palestinian participants a limited amount of financial support has been made available by the sponsors of this Seminar to cover travel and board costs in connection with the Seminar. It is hoped that this special support will stimulate further scientific collaboration with and between Middle East countries and, furthermore, that it will thereby also contribute to the promotion of the peace process in this part of the world.

2. PROGRAMME

A preliminary list of the different sessions and talks is given below. All talks will be plenary.

Base Facilities
Particle Colliders; Synchroton Radiation Sources.

Research Programmes
High Energy Physics : Overview of High-Energy Physics; High-Energy Physics Phenomenology; Collider Experiments; Fixed-Target Experiments; Astroparticle Physics Experiments.

JSLM POST

Egypt's antisemitic press

3/3/97

Today the Anti-Defamation League will present the Knesset with a just-released report documenting virulent antisemitism in the Egyptian press. When asked about this distressing phenomenon, President Hosni Mubarak is fond of (a) comparing press freedom in Egypt to that of the United States and (b) attacking this newspaper for what he perceives is an anti-Egyptian bias.

"Don't ask me to control the press here – I simply can't. Our media follows the example of the American media," Mubarak told the *Jerusalem Report*, adding that, "*The Jerusalem Post* frequently offends me with its awful and terrible cartoons and its most [im]polite articles." Not so fast, President Mubarak. We hate to be impolite, but as far as we know, the US government does not own stock in the major newspapers, and appoint their editors and the chairmen of their boards. Nor does the US government enjoy a monopoly on the printing and distribution of newspapers, or use that monopoly (according to the US State Department) "to limit output of opposition publications."

The prestigious international writers' association PEN reports that, "Although Egypt's press is one of the least restricted in the Arab world, serious problems exist, and they are worsening in the face of civil conflict." According to PEN, "In 1995, already restrictive press laws were amended to include what has been called the 'press assassination law,' supposedly enacted to help combat terrorism, but which in fact narrows the scope for freedom of expression."

This included a provision for "precautionary detentions" of journalists, in other words, detention of journalists without any charges. In any case, even if the press were as free as a bird, as Mubarak would have us believe, that would not absolve the Egyptian society as a whole from addressing the hatred that is being fomented on an almost daily basis against Jews, Judaism, and Israel.

Jews, according to the ADL study, are consistently portrayed as a "satanic force trying to undermine Islam," as "seeking domination of the Middle East and the world," and as equivalent to Nazis. The report continues, "The most common depiction [of Jews] is the stooped, bearded man wearing a black robe with a long, crooked nose – the same distorted stereotype of a European Jew used by the Nazis and later found in Communist Russia."

Prime Minister Binyamin Netanyahu, like other Israeli leaders before him, is routinely depicted as a Nazi, complete with swastikas on his uniform. Last October, Mustafa Amin wrote in *Al-Akbar*, "If he continues Hitler's policies, he will end like Hitler." As if this were not enough, Jews are seen as "the origin of evil and corruption, spreading AIDS, prostitution, and the insidious destruction of Egyptian society," the ADL reports. Blood libels from the Middle Ages are alive and well in Egypt, where *Al-Ahram* published an article claiming that Jews sacrifice Christian and Moslem children.

Though the vitriol has been stepped up a notch since Netanyahu's election, the pattern is consistent, according to the ADL, since Israel's founding in 1948, through the peace with Egypt in 1979, and after the signing of the Oslo Accords in 1993.

To this, Mubarak says, "Don't ask us to 'educate' our people for peace with Israel – they'll tell me to go to hell." Is this what Mubarak really wants us to believe? That Egyptians are more anti-Israel than Jordanians, whose king is fervently calling for peace between "all of the children of Abraham?" Mubarak is saying, in effect, do not ask me to lead my people – they do not want peace with Israel and I understand them.

Egypt wants and expects to be treated as the leader of the Arab world, particularly with respect to the peace process. Yet it is impossible for Egypt to lead the Arab world toward a real, lasting peace with Israel if it does not also lead on the front of cultural acceptance and normalization.

The sad part about Egypt's backward form of leadership is that it permeates and suffocates the culture as a whole. Restrictions on press freedom, the epidemic of press antisemitism, and the spoiler role in the peace process are all symptoms of a larger, even more troubling phenomenon: the shift in Egyptian culture toward extremism.

As Egyptian author Karim Alrawi wrote in *Index on Censorship* in May 1994, "It is hard to describe what it is like to be living in a society whose culture is dying. It is not just a question of the persecution of writers and academics, nor of the tightening of restrictions on publications and the increased censorship of theaters and films... It is a little like watching a large and lumbering animal slowly being sucked into the mire; it is the knowledge that what was won by past generations so painstakingly is being lost, possibly forever."

Ultimately, it is Egypt that is the victim of its descent into a Nasserist pan-Arabism which thumbs its nose at modernity and modernity's representative in the Middle East, Israel. Antisemitism is an example of such backwardness in its raw form; it will take real leadership to begin the hard task of uprooting it.

Synchroton Radiation Physics : Diffraction in Materials; Diffraction in Macromolecules; Scattering; Spectroscopy; Imaging.

Instrumentation

Detectors for High-Energy Physics : Tracking; Calorimetry ; Particle Identification; Electronic and Calibration; Data Acquisition and Transmission.

Beam Lines and Detectors for Synchroton Radiation : Insertion Devices; Beam Optics for X-R Beam Optics for UV and Soft X-Rays; CCD and Solid State Detectors; Gaseous Detectors; Electron Detectors.

Particle Detector and Accelerator Applications

Medical and Biological Detectors; Medical Treatment; Energy Amplifier.

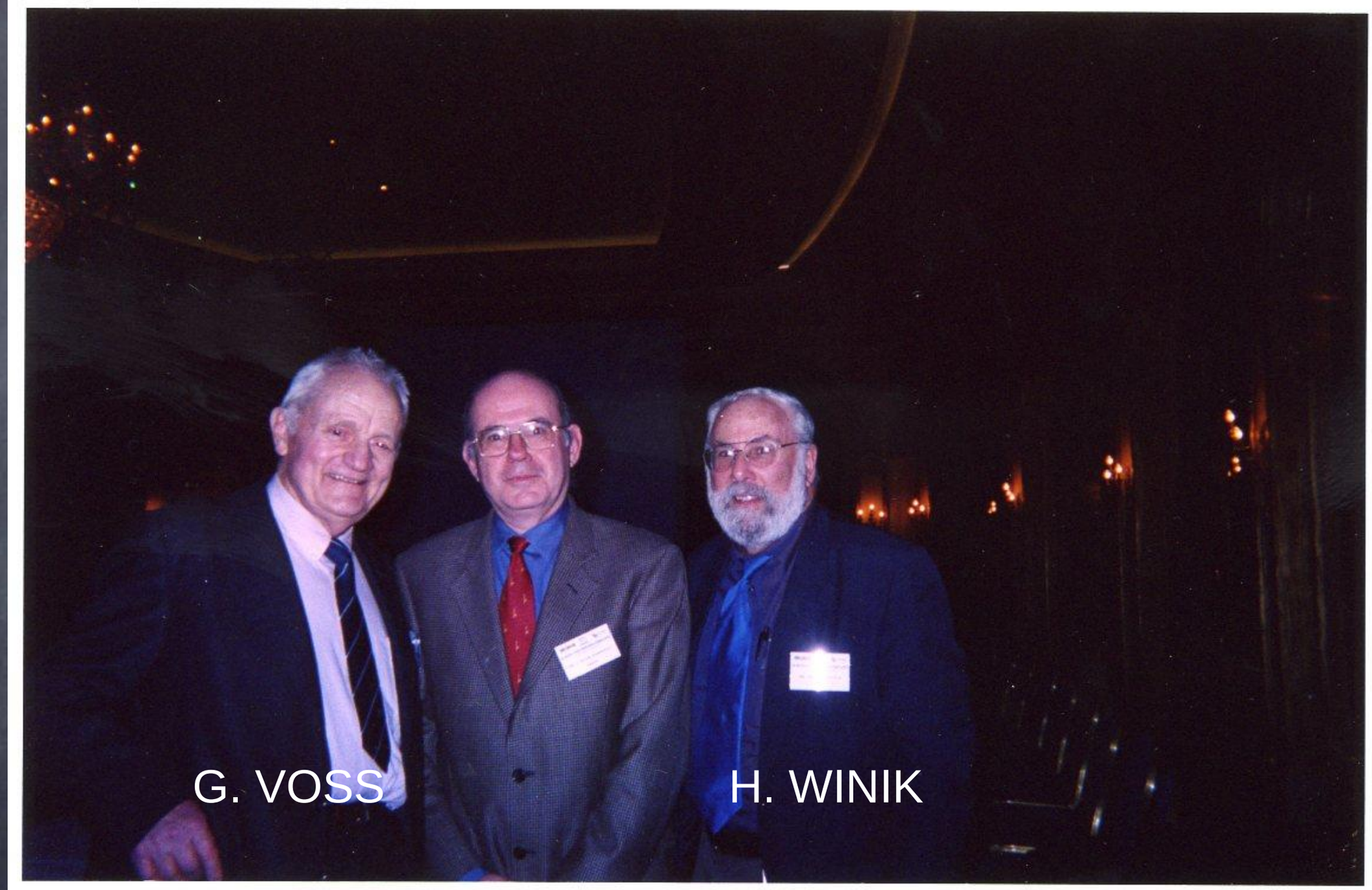
Participation and Impact in International Physics Collaboration

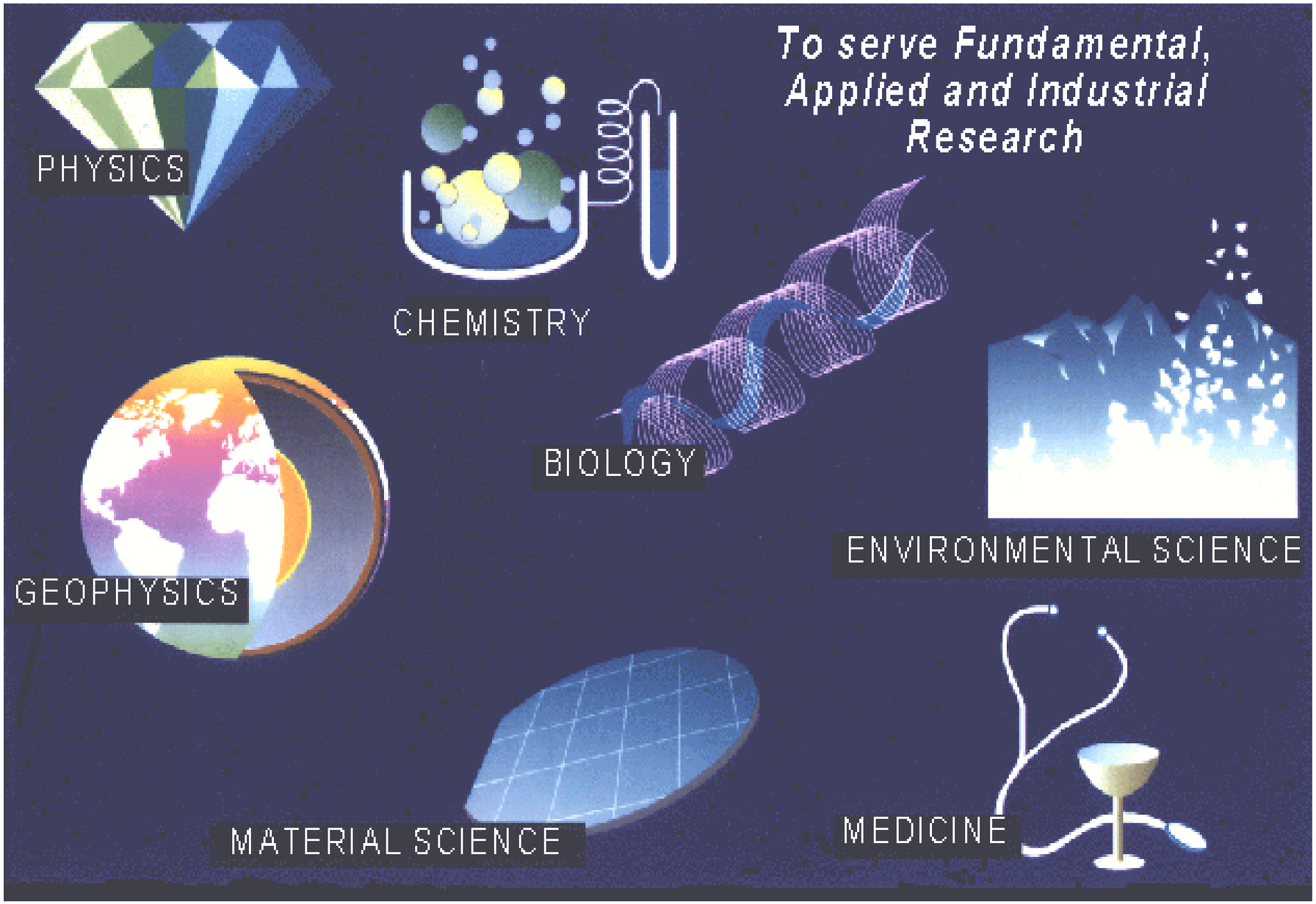
Overview of Middle East Activities

Panel Discussion : Participation and Impact in International Physics Collaboration.

There will be about seven 45-minute talks per day during five days. The lecture days Thursday, Friday, Saturday, Monday and Tuesday, 31.10 - 5.11.1996, and the session hours 9^{00} - 12^{00} and 14^{00} - 18^{00}. There will be time for questions and discussions after each talk. afternoon a special session will be organised with a panel discussion including representat from the Middle East .

It is intended to offer participants the possibility to visit the CERN laboratory in Gen or the ESRF laboratory in Grenoble. There are also plans to have one or two detec demonstration set-ups at the conference site to demonstrate some basic principles of radiat detectors.


G. VOSS
H. WINIK


To serve Fundamental, Applied and Industrial Research
PHYSICS
CHEMISTRY
BIOLOGY
ENVIRONMENTAL SCIENCE
GEOPHYSICS
MATERIAL SCIENCE
MEDICINE

II: Constructing the Foundations

Uppsala

H. SCHOPPER K. TOUKAN

R.Sarraf 13-12-2004

OLD GERMAN MACHINE TAKE IT OR LEAVE IT?

OLD GERMAN MACHINE TAKE IT OR LEAVE IT?

- TAKE IT !

1999

UNESCO -PARIS

DECEMBER 1999

- WHERE?
- FORMALISM- EMULATE CERN’S UP TO “DETAILS” SUCH AS STATUS OF NON-STATES.

Armenia

Bahrain

Cyprus

Egypt

France

Germany

Greece

Iran, Islamic Republic of

Israel

Italy

Japan

Jordan

Kuwait

Morocco

Oman

Pakistan

Palestinian Authority

Russian Federation

Sudan

Sweden

Turkey

United Arab Emirates

United Kingdom of Great Britain &Northern Ireland

United States of America

2000

- AMMAN: 15TH MARCH

Middle East

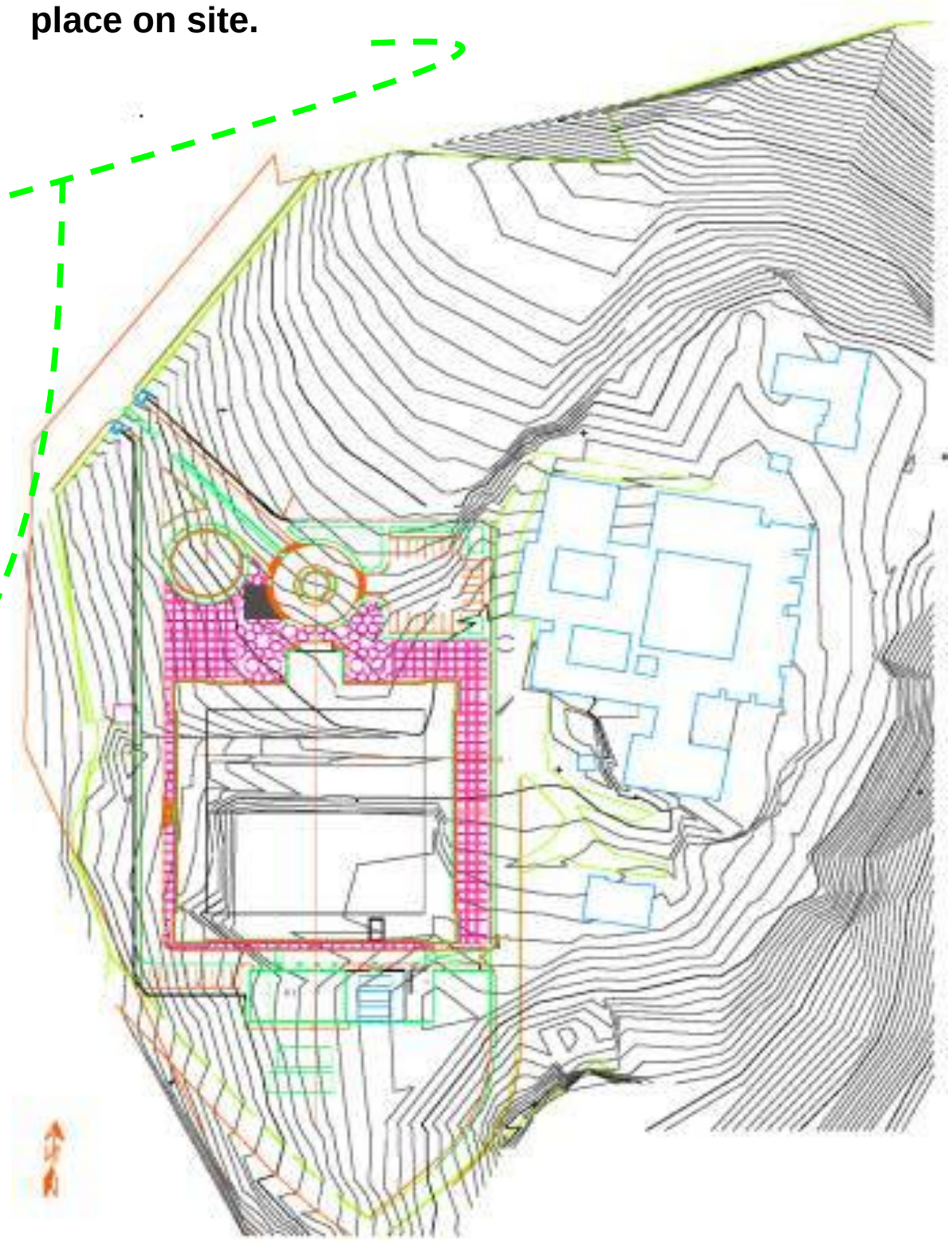

ISTANBUL
ANKARA
ALEPPO
LARNACA
BEIRUT
DAMASCUS
TEL AVIV-YAFO
ALEXANDRIA
AMMAN
AL ARISH
CAIRO
AQABA
SHARM EL SHEIKH
TURKEY
SYRIA
IRAQ
JORDAN
LEBANON
CYPRUS
Mediterranean Sea
Anadolu Dağları
Taurus Mountains
Toros Dağları
Batı Toroslar
Dead Sea
Western Desert
Great Sand Sea
An Nafūd
Euphrates
Wadi an Sirhan

Location of SESAME(I)

- Within easy reach of Jordan, Israel, Palestinian Authority.
- Samples/equipment/people can in principle be transported by car.

Location of SESAME(II): Allaan, north of A-Salt

- Currently a college of Al-Balqa University.
- SESAME to replace the olive grove, the only flat place on site.

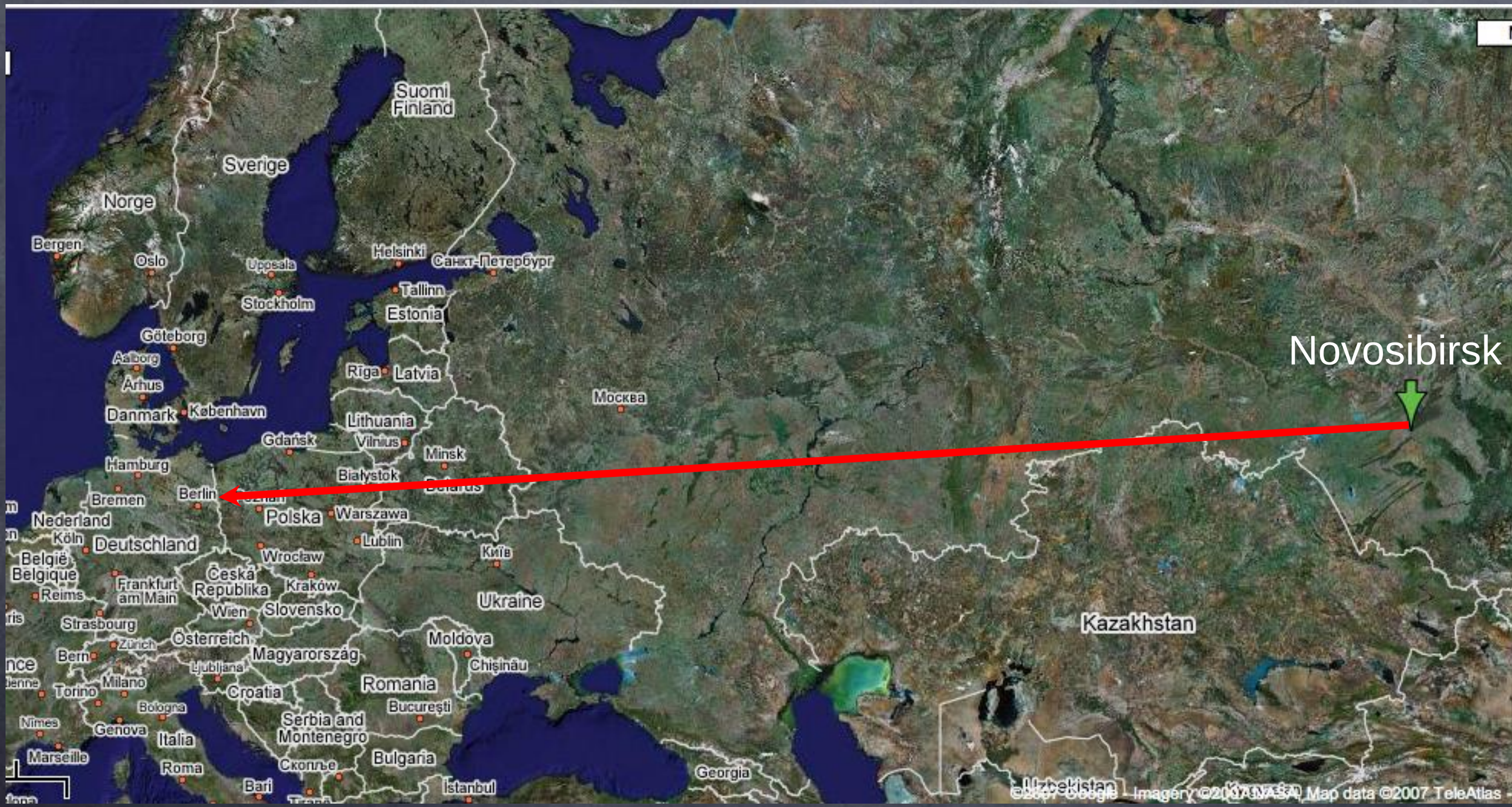


2000

- CERN: 11TH APRIL JORDAN CHOSEN AS A SITE.
- COUNCIL: JUNE, APPROVES JORDAN AS SITE.

April 2002, 2nd conceptual design (2 GeV) submitted to Council and the EU.

June 2002, Bessy I shipped to Jordan.

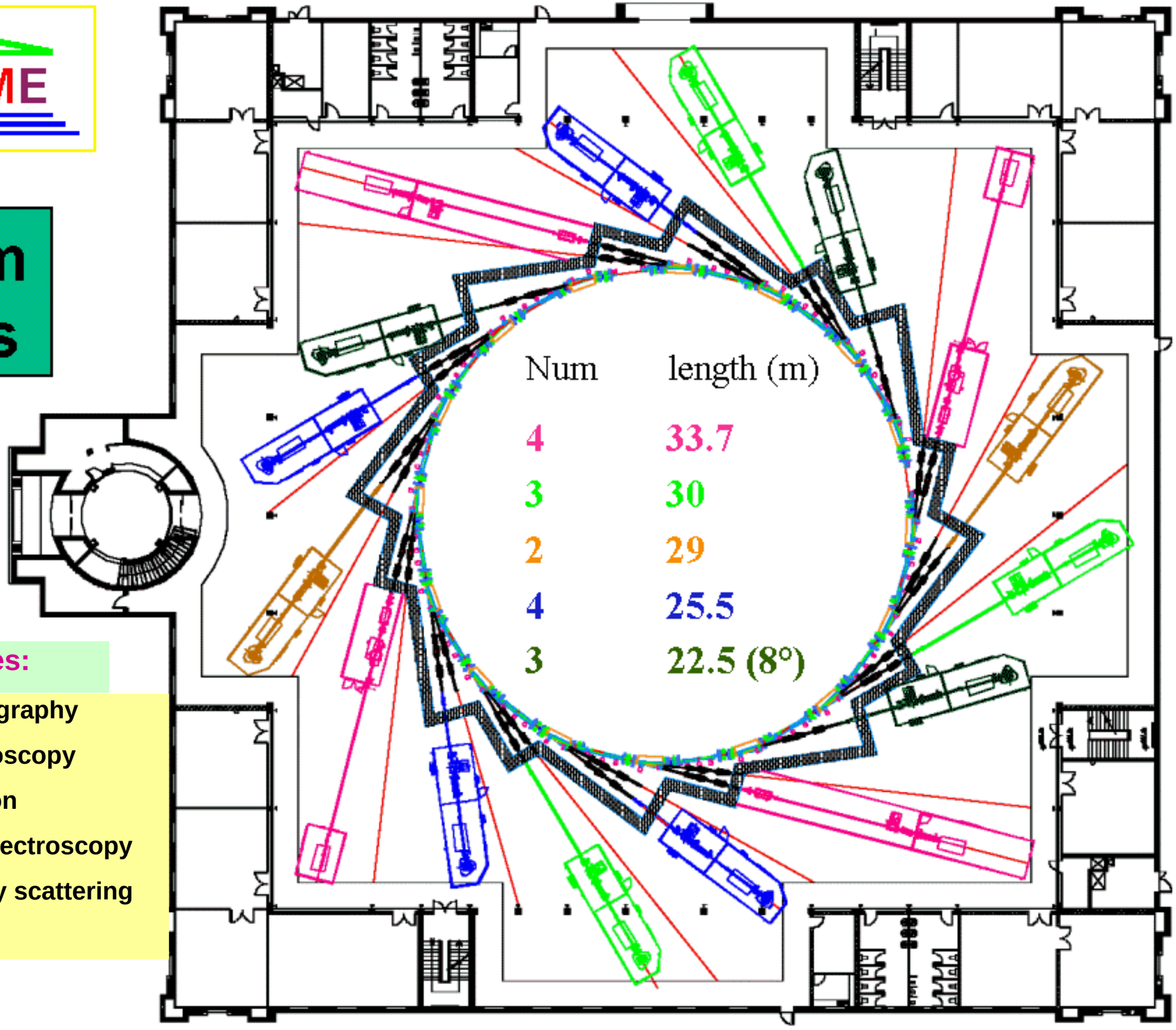

Suomi
Finland
Sverige
Norge
Bergen
Oslo
Uppsala
Helsinki
Санкт-Петербург
Tallinn
Estonia
Stockholm
Göteborg
Aalborg
Århus
Riga
Latvia
Москва
Danmark
København
Lithuania
Vilnius
Gdańsk
Minsk
Hamburg
Białystok
Bremen
Berlin
Nederland
Polska
Warszawa
Köln
Deutschland
Lublin
Київ
België
Belgique
Wrocław
Česká
Republika
Kraków
Frankfurt
am Main
Reims
Wien
Slovensko
Ukraine
Strasbourg
Österreich
Moldova
Zürich
Bern
Magyarország
Chişinău
Ljubljana
Milano
Romania
Torino
Croatia
Bologna
București
Nîmes
Genova
Serbia and
Montenegro
Italia
Marseille
Bulgaria
Roma
Скопје
Georgia
Bari
İstanbul
Novosibirsk
Kazakhstan
Uzbekistan
Map data ©2007 TeleAtlas


West
Bank
Jordan
srael
©2007 Google - Ma

January 6th 2003

SESAME

Beam Lines

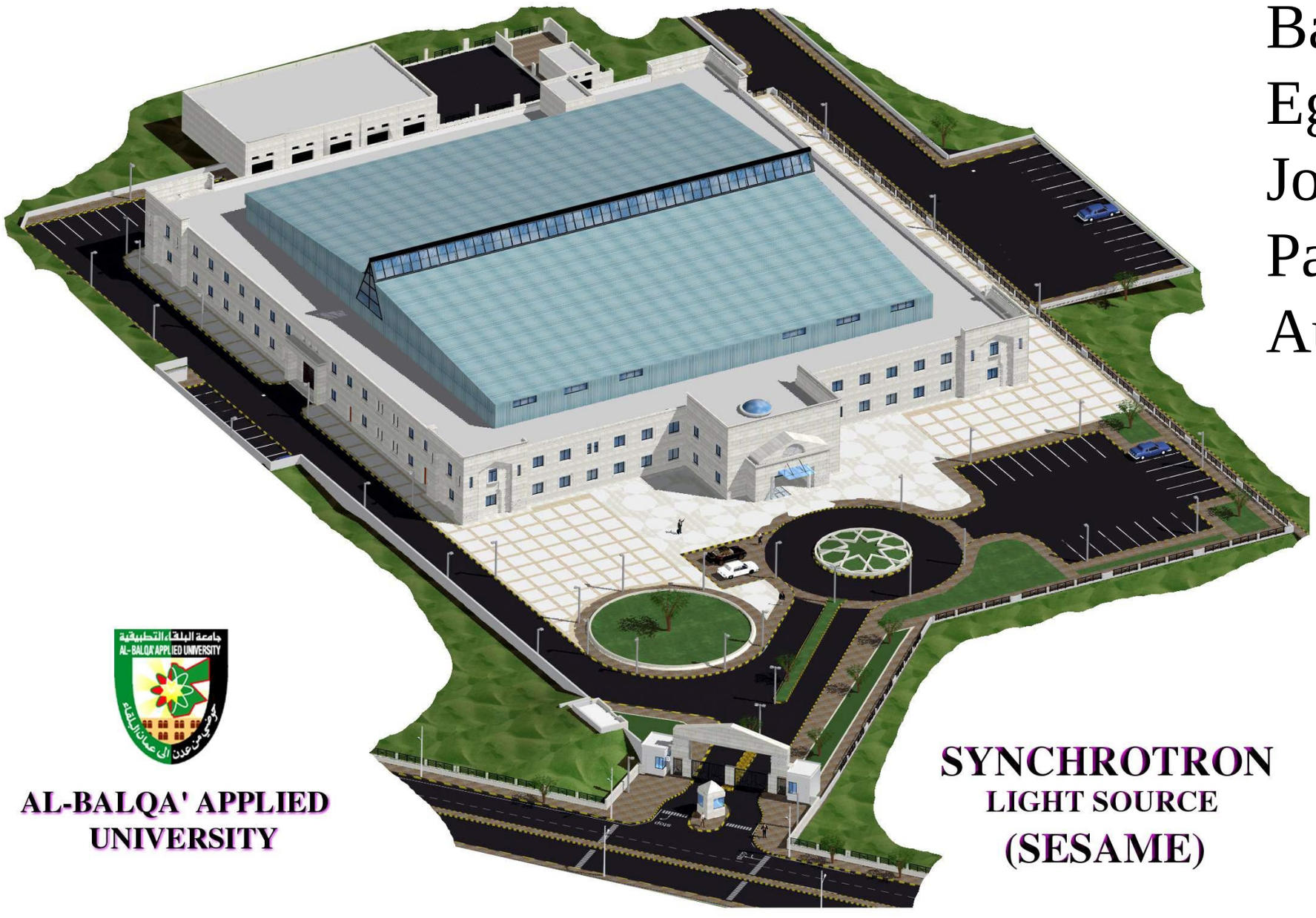


First beamlines:

- Protein Crystallography
- Infra Red Spectroscopy
- Powder Diffraction
- Photoelectron spectroscopy
- Small Angle X-ray scattering
- EXAFS

SESAME

***S**ynchrotron-Light for **E**xperimental **S**cience*
and
***A**pplications in the **M**iddle **E**ast*



AL-BALQA' APPLIED UNIVERSITY

SYNCHROTRON
LIGHT SOURCE
(SESAME)

Bahrain, Cyprus, Egypt, Iran, Israel, Jordan, Pakistan, Palestinian Authority, Turkey

www.sesame.org.jo

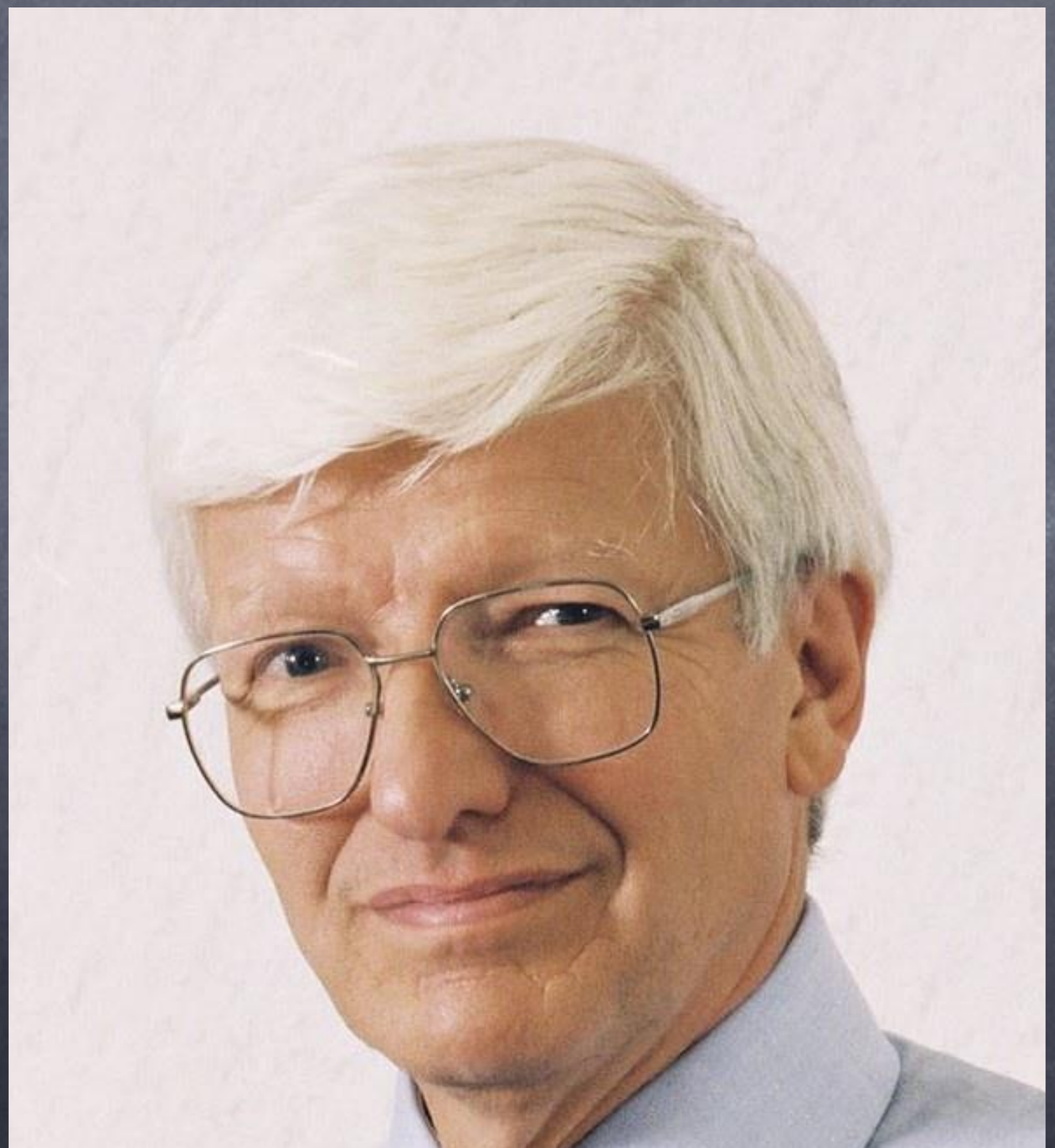
SESAME

November 3rd 2008


R.Sarraf

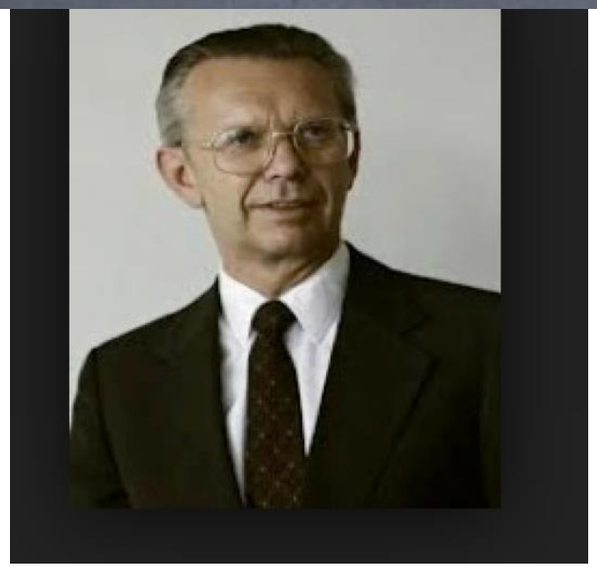
III: Putting the Puzzle Together

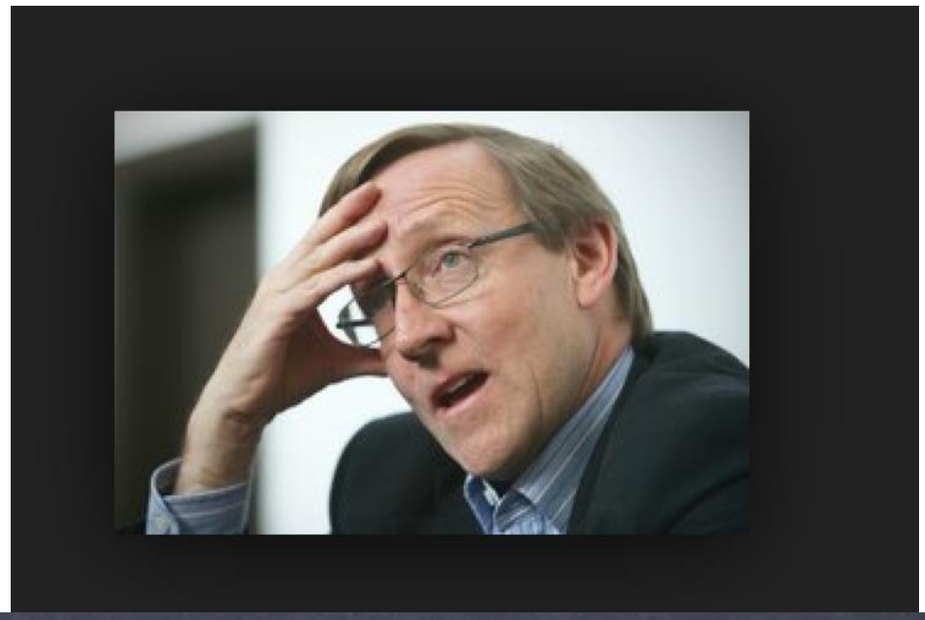
Sir Chris Llewellyn-Smith



Nov. 2008

CERN-SESAME

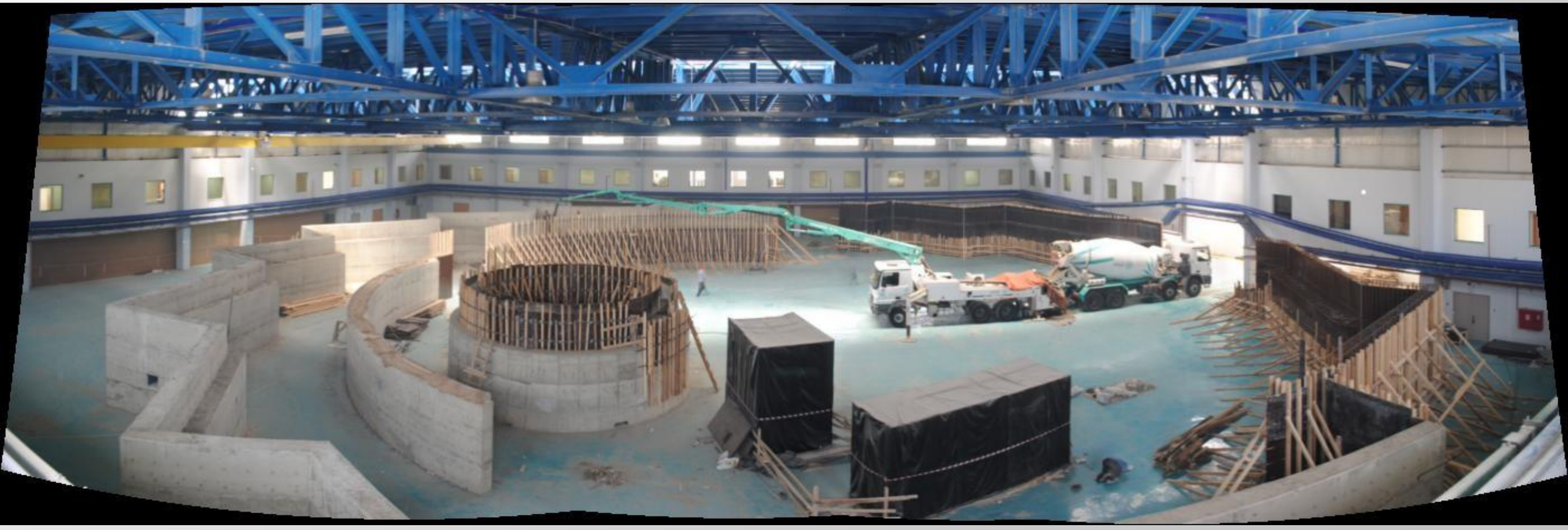




Nobel Laureates visit SESAME site in June, 2008

45 Laureates have endorsed SESAME *"as a beacon, demonstrating how shared scientific initiatives can help light the way towards peace"*

Shielding for the Booster and Main Ring under construction May 2010



Shielding under construction November 2010


שאיראן ויישראל מעורבות בו.
-וגם פלסטינים. -וזה אומר הרבה.

المجلس
التعليم
العالي
המועצה
להשכלה
גבוהה
COUNCIL FOR HIGHER EDUCATION
Planning & Budgeting Committee | הועדה לתכנון ולתקצוב

Prof. Manuel Trajtenberg
Chairman

פרופ' מנואל טרכטנברג
יושב-ראש ות"ת

February 22, 2010
00033510

Professor Khaled Toukan
SESAME Director
Jordan

Dear Professor Toukan,

It is a pleasure to inform you that the Planning and Budgeting Committee (PBC hereafter) of the Israeli Council for Higher Education, which I Chair, shares your view as to the importance of the SESAME project, and is ready to participate in financing it. In fact, the Israeli Ministry of Finance and us agree that the PBC will be in charge of overseeing the project and dealing with the authorities of Sesame regarding all aspects of Israeli involvement with the project.

As to the financial aspects, the Israeli Ministry of Finance and the PBC agreed that we will be ready to participate in funding SESAME at the rate of up to 1 million dollars per year for 5 years, provided that the following conditions are met:

1. That at least four out of the other major participating countries do as much (among them Egypt, Jordan, Turkey and Cyprus);
2. That the SESAME project is able to show a balanced budget, taking into account the financial participation of the above mentioned countries and other members and that of the international contributors and benefactors to the project.
3. That a resolution of the annual member fees will be achieved within the following year.

Hoping that the project will indeed come to fruition,

With Best Regards,

Professor Manuel Trajtenberg
Chair, Planning and Budgeting Committee
Council for Higher Education

Copies:
Mr. Yonatan Regev, Manager of Higher Education and R&D Sector, Ministry of Finance

P.O.B. 4037, Jerusalem 91040, Israel Fax: 02-5679943 פקס: Tel: 02-5679913 טל: 91040 ירושלים, 4037 ת"ד


Status of Annual Contributions
Fully up to date, including 2010:
Cyprus, Israel, Jordan, Turkey
Fully up to date, apart from 2010:
Egypt, Pakistan - but note that in November 2009 the Council agreed that Pakistan would pay all the 2008 level in 2009 and 2010
In debt:
Bahrain - has not paid since 2005, and now owes $449,023 (including $152,930 for 2010)
Iran - did not pay for 2008 or 2009 due to a bureaucratic oversight. Early this year they paid an amount equal to the 2009 contribution which was set against 2008 + part of 2009. The new owed $137,500 (50% of 2009) + $305,135 (2010) = $406,264. I am assured that payment of this amount is in the pipeline.
Palestinian Authority - paid $50,000 during 2010 (including $50,000 for 2010)

- March 10th 2012 a small room in Amman

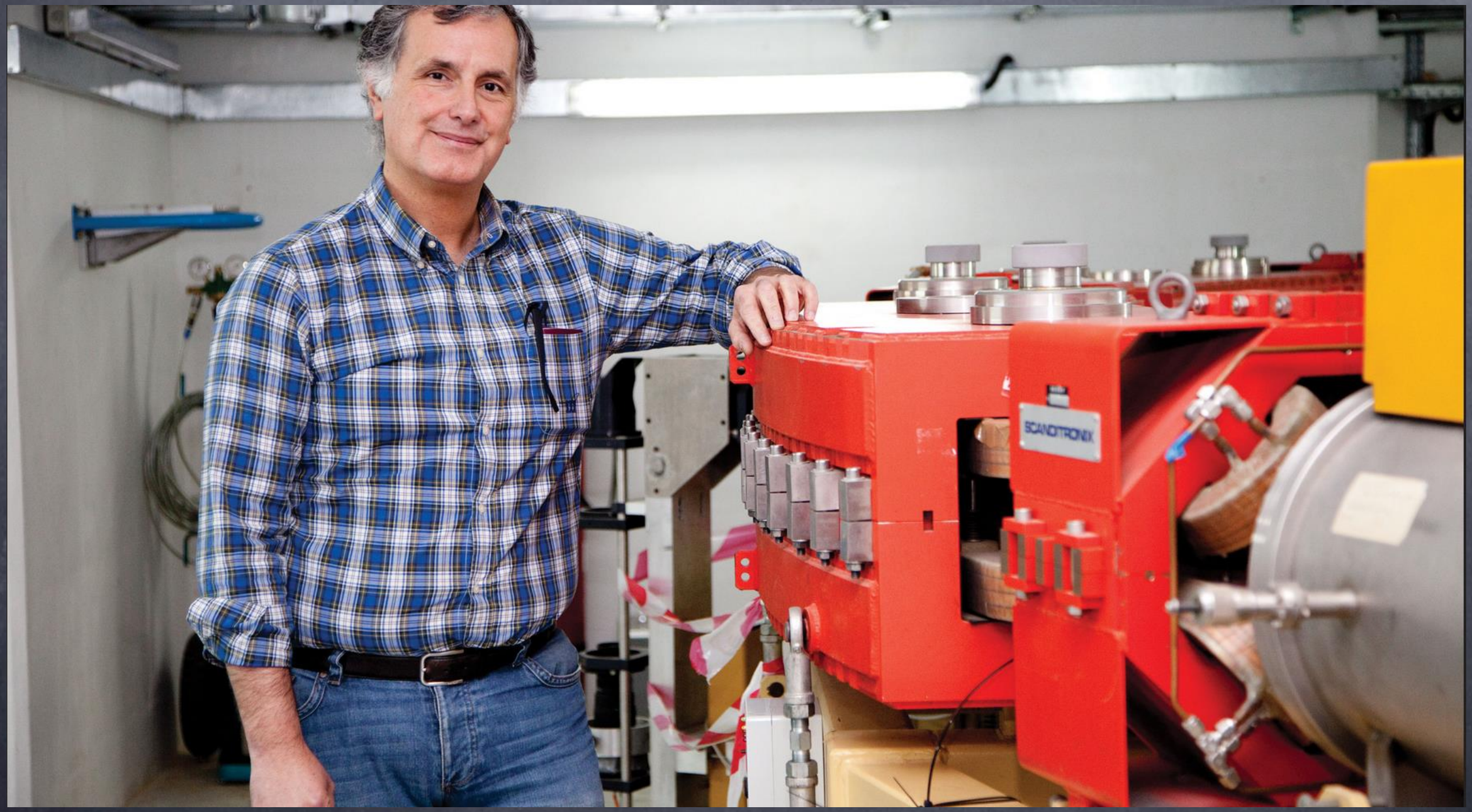
9
9

July 2012

5M €

Italy Donates 2-5 Million Euro

Back to Trieste-Paolucci



MOHAMED-ABDELLATIEF

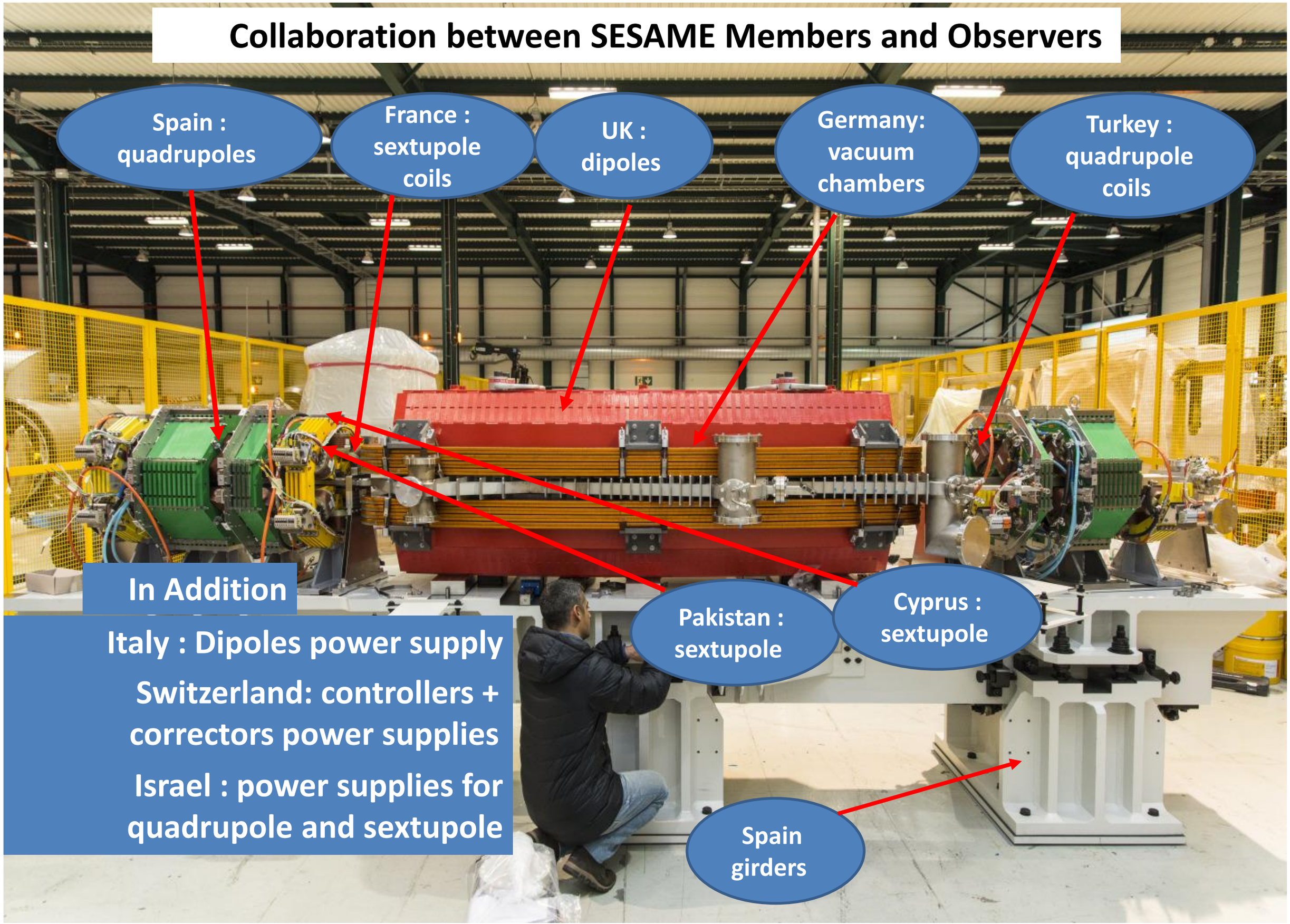
GIHAN-KAMEL

SESAME staff in the control room at the moment of achieving 800 MeV

Magnet for Sesame at Cern 200315

Sesame Girdle from Spain at Cern 200315

First of 16 sectors of the main storage ring at CERN 31 March 2015

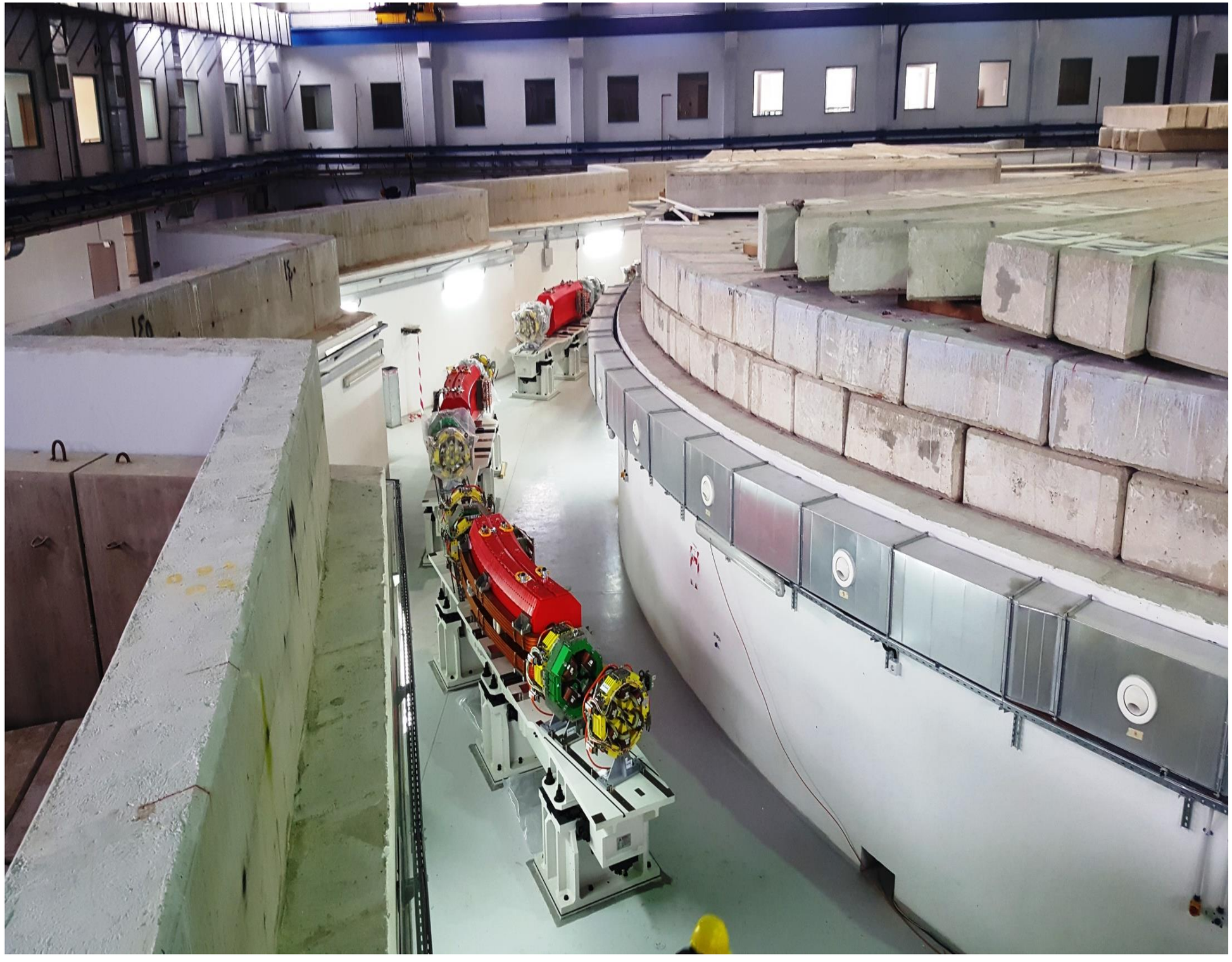


Storage Ring Sextupole Magnets Ready for Assembly

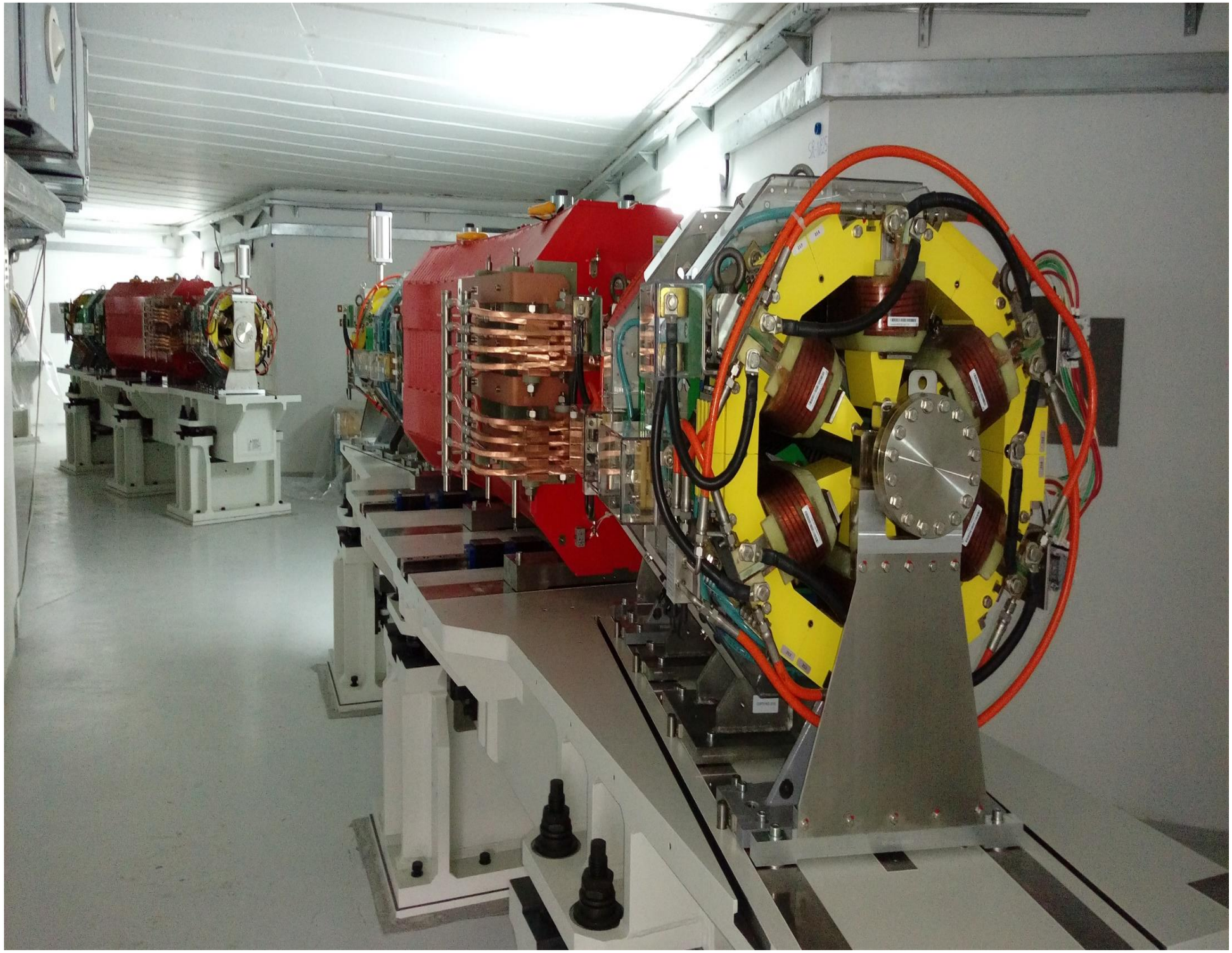
A Vacuum Chamber being Assembled for Testing

Source of the photo: © SESAME | One cell of the main storage ring installed in the shielding tunnel in the experimental hall with (left to right) Maxime Dumas (CERN), Maher Shehab, Erhard Huttel and Mohamed Khalileh (SESAME) and Carlos Lopez (CERN)

Installation of SR Magnets



Vacuum Chamber Installed




SR-NP5

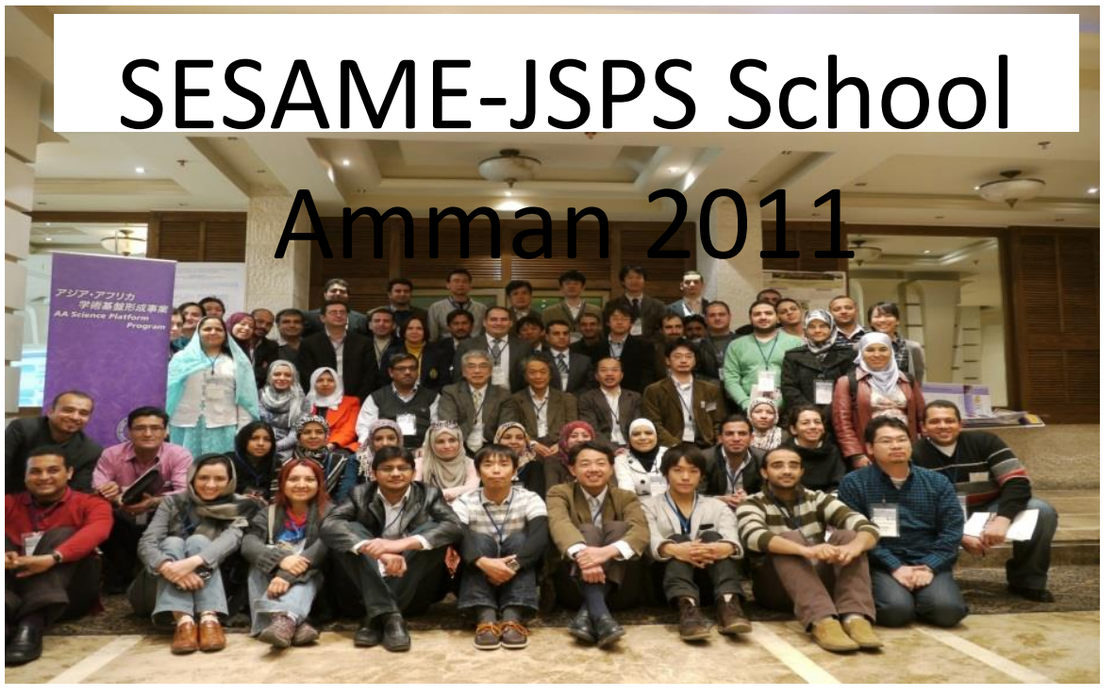
Huttel

TRAINING- IAEA MANY OTHERS

- PEOPLE AND EQUIPMENT

Training Programme (thanks to external support listed later)

- Users' Meetings, Schools, Workshops, Fellowships, visits to operating light-sources,.. . - is building technical and scientific capacity in the region

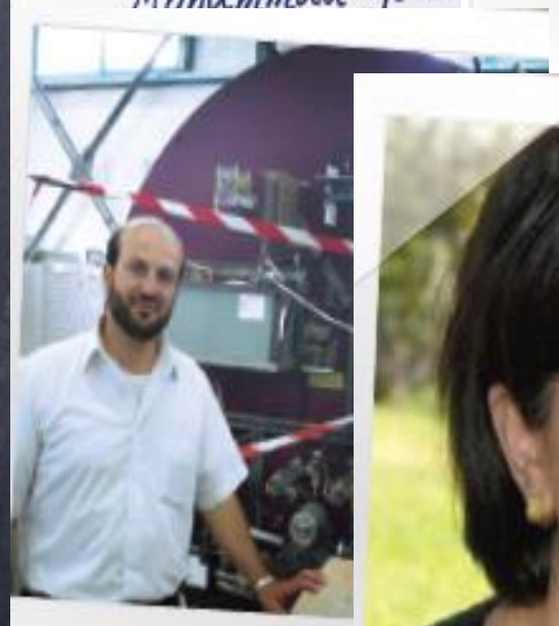


Some SESAME People, including Users of Day One Beamlines

Mohammad Yous

Sumera Javeed

Mukhles Sowwan



Maher At

Irit Sagi

Vasilis Promponas


R.Sarraf

SESAME roof on 15/12/2013

Aerial view of the roof ready for final stage of dismantling in 5 pieces each about 20 tons (using 250-ton crane)


SESAME
06.03.2015

PHASE 1 BEAMLINES

Beamline	Energy Range	Source
X-ray Absorption Fine Structure/X-ray Fluorescence Spectroscopy (XAFS/XRF)	3-30 keV	Bending magnet
Infrared spectromicroscopy (IR)	0.01-1 eV	Bending magnet
Materials Science (MS)	3-25 keV	Multi-pole wiggler
Macromolecular Crystallography (MX)	4-14 keV	Bending magnet
Small Angle and Wide Angle X-ray Scattering (SAXS/WAXS)	8-12 keV	Bending magnet
Extreme Ultraviolet spectroscopy (EUV)	10-200 eV	Bending magnet
Soft X-ray/Vacuum Ultra-Violet (VUV)	0.05-2 keV	Elliptically polarized undulator

SESAME Beamlines Chosen by Users (Users' Meeting 2003)

MOHAMED-ABDELLATIEF

GIHAN-KAMEL

GIORGIO PAOLUCCI

DAY 1 BEAMLINES

Will enable

- **Structural molecular biology** → mechanisms of proteins at the atomic level, guidelines for developing new drugs,…
- **Materials and environmental science** → new materials, improved catalysts, e.g. for the petrochemical industries, …
- **Molecular biology, environmental studies, materials, and archaeological sciences**
- **Materials science** → materials at extreme pressure and temperature, characterizing new smart materials

Floor plans are being made and tests of components have started

In Phase 1, three more beamlines will be added when funds permit

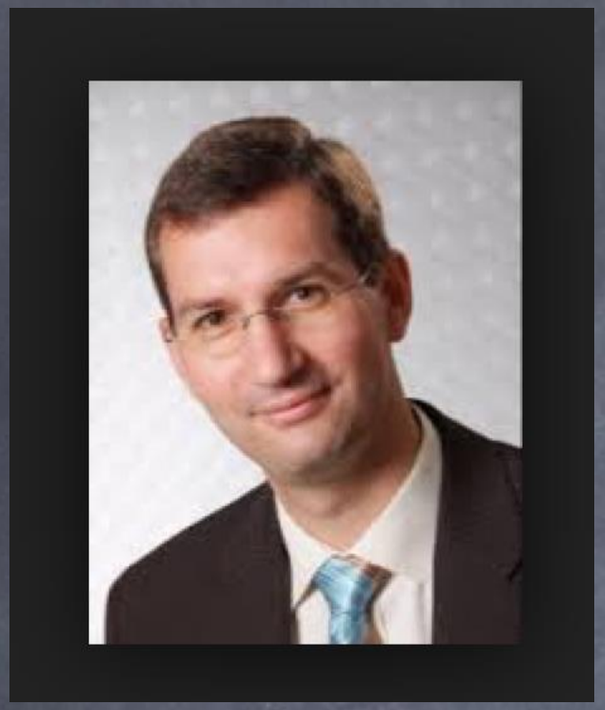
THE SCIENTISTS AND THEIR DRIVE BROKE BOUNDARIES AND TOOK THE PROJECT AND THEIR COUNTRIES TO WHERE NO ONE HAD THE RIGHT TO EXPECT

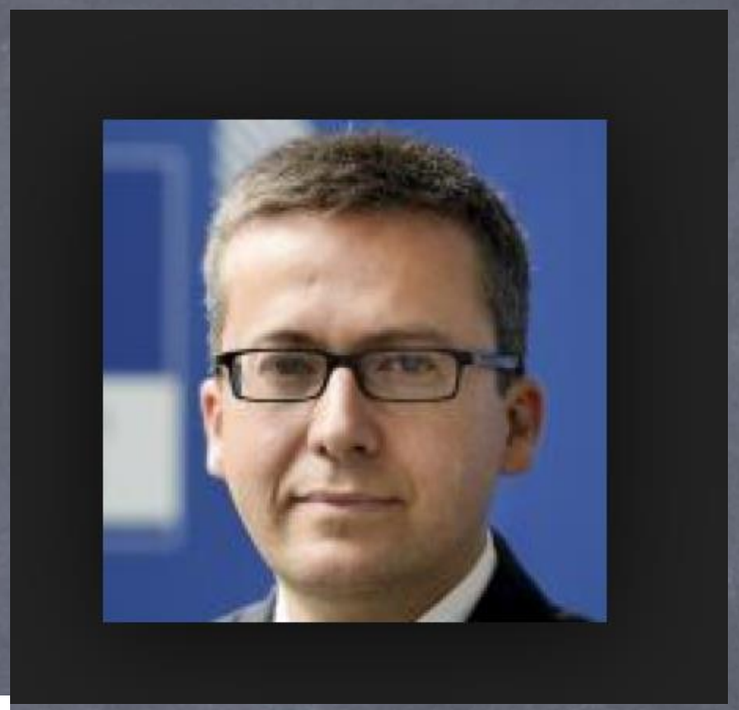
AND ONCE THERE THEY HAD NOT BLINKED-

TILL NOW

Preaching


אני חושב שאם ברצונך
לעסוק במדע,





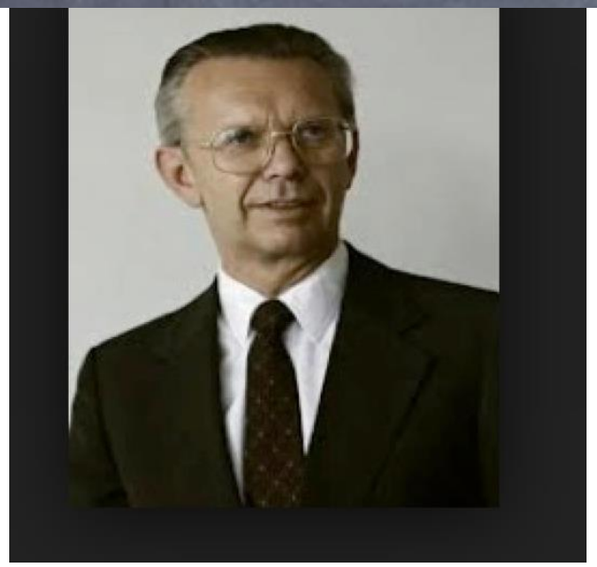
Good People

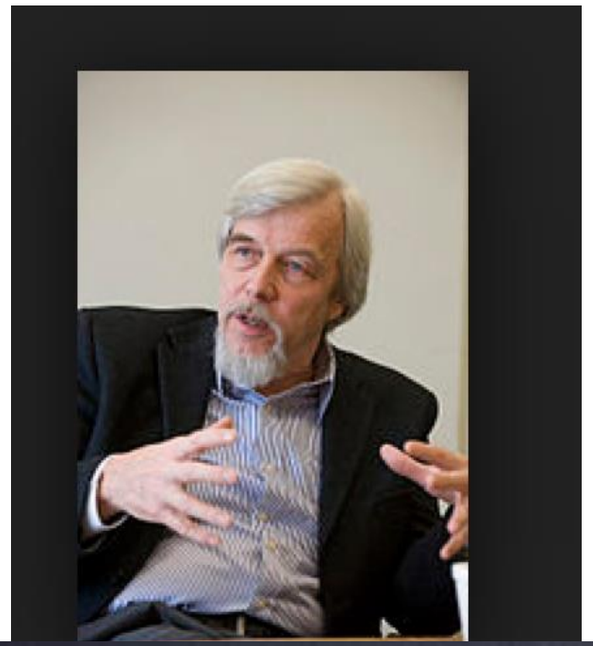
B. Fabiane-C. Moedas

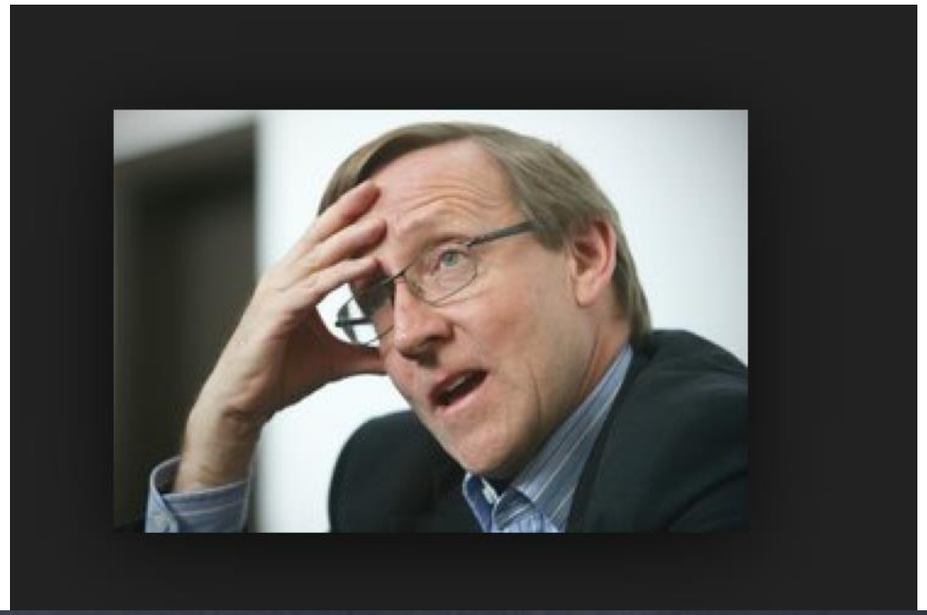
EU- ABOUT 12 MILLION EU
ITALY 2-4 MILLION EU
TOTAL77- EU/$
47 FROM THE REGION
A LOT!!!

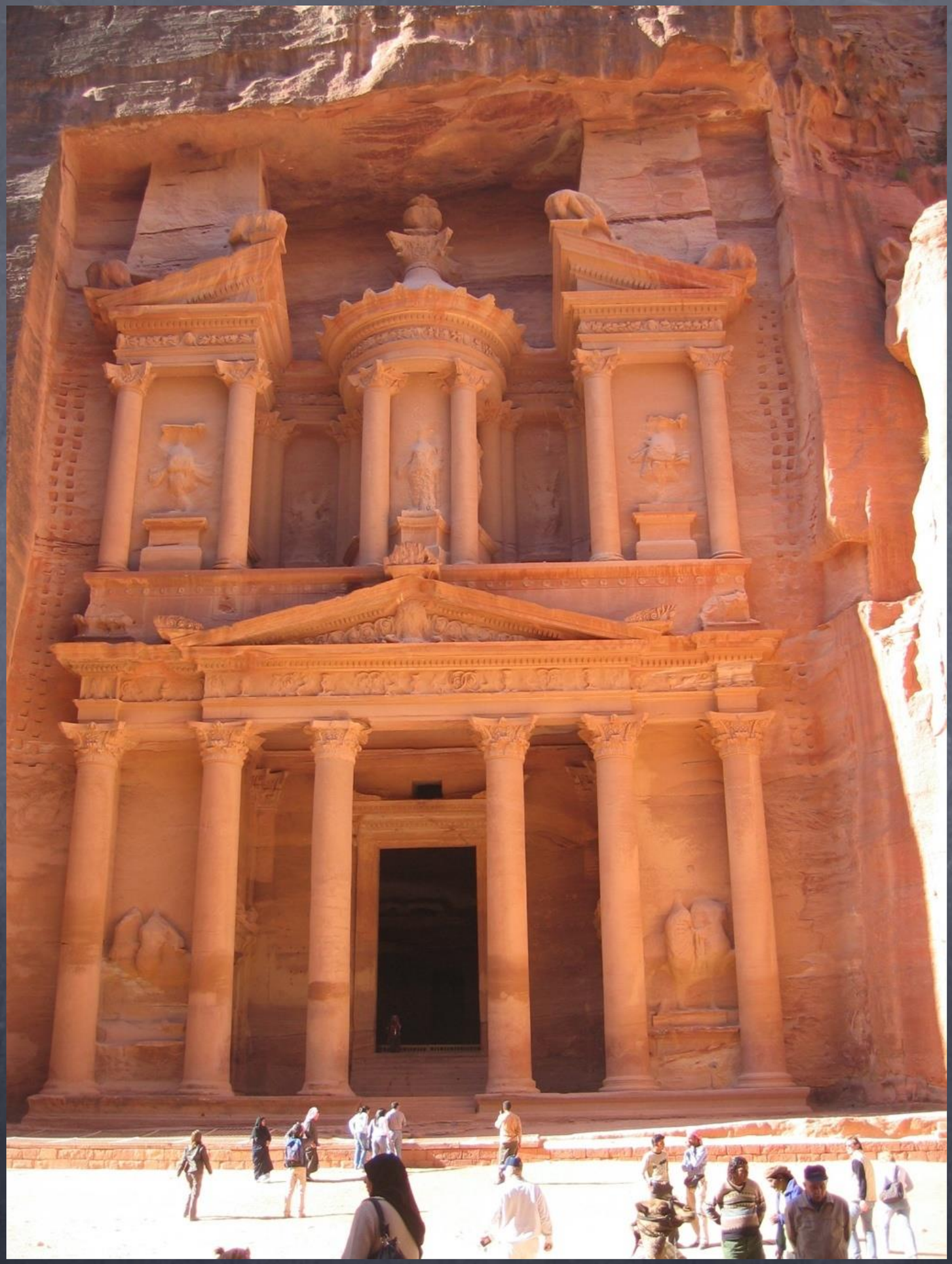

OFFICE OF SCIENCE

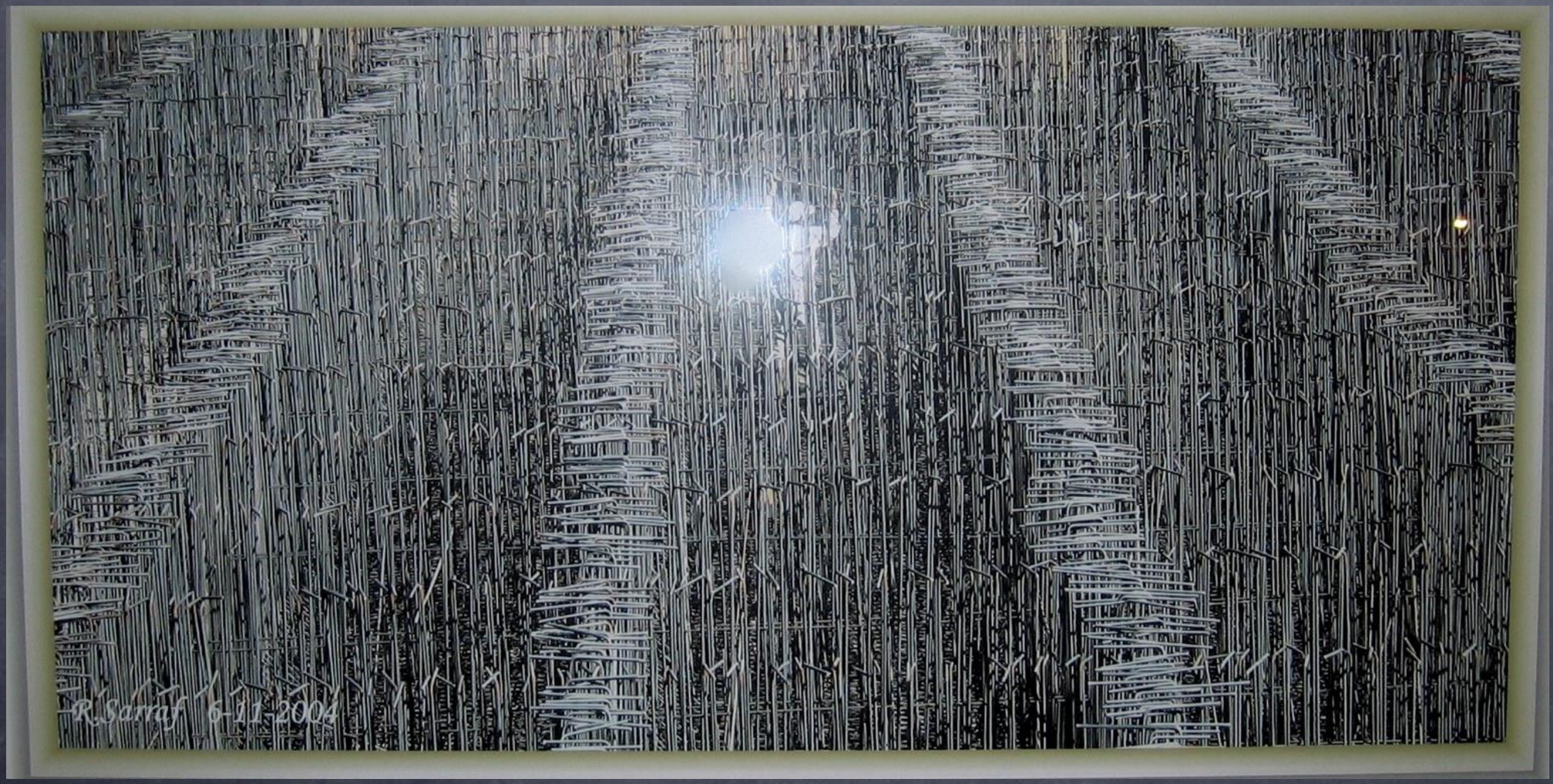
IV: FUTURE-HIGH QUALITY-NOBEL WORTHY










R.Sattar 6-11-2004

Thank You

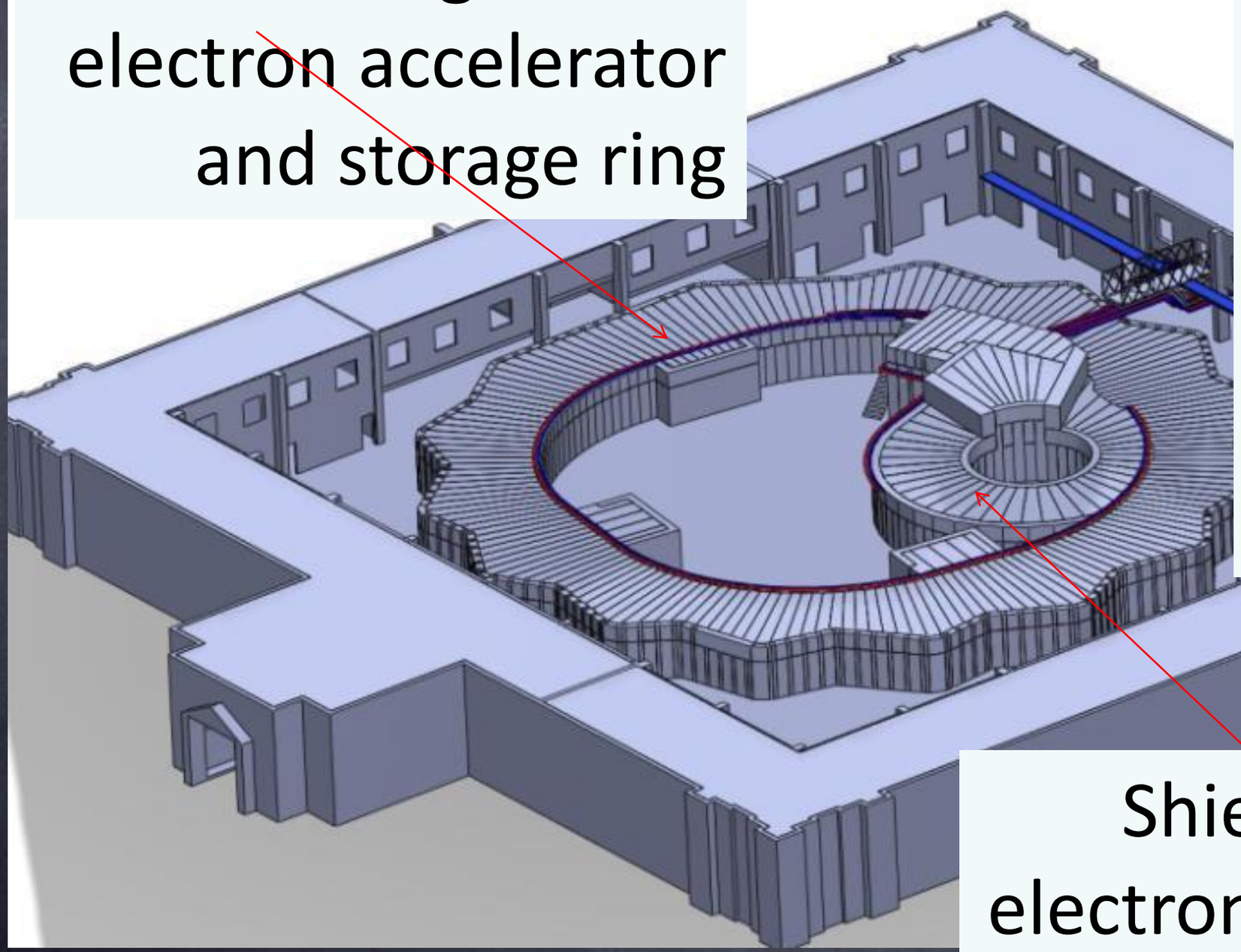
תודהGrazie Mille

ربح

شكـــرا

Inside the SESAME Experimental Hall

Shielding houses electron accelerator and storage ring



Intense beams of light (infra-red to X-rays) generated by circulating electrons exit through ports in the shielding

Shielding houses electron source, pre-accelerator and