



CERN: Sixty years of science for peace and development

IPU Committee on Middle East Questions

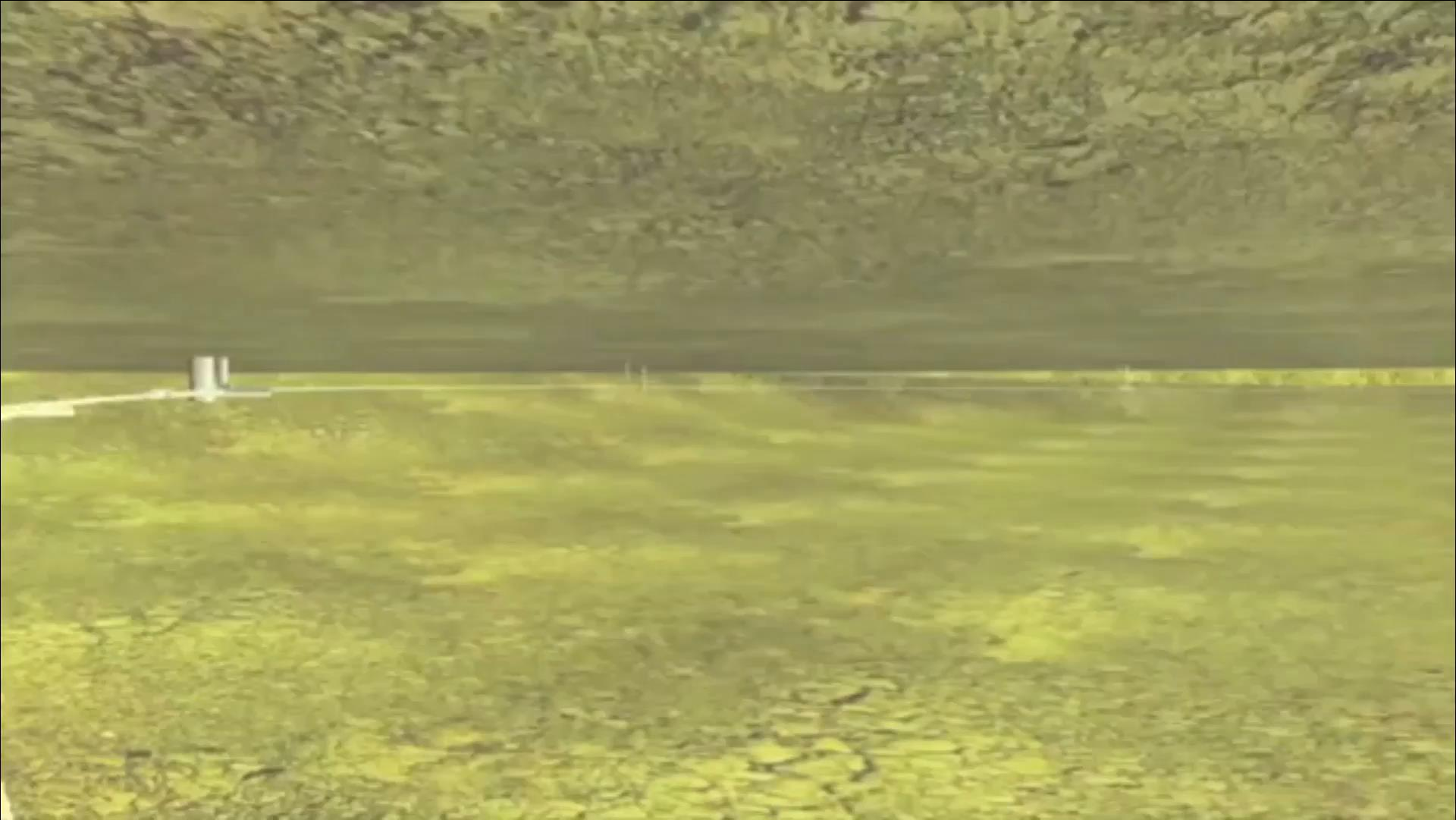
Roundtable on Water

The role of science and technology in projects of peace

Geneva, 1 June 2016

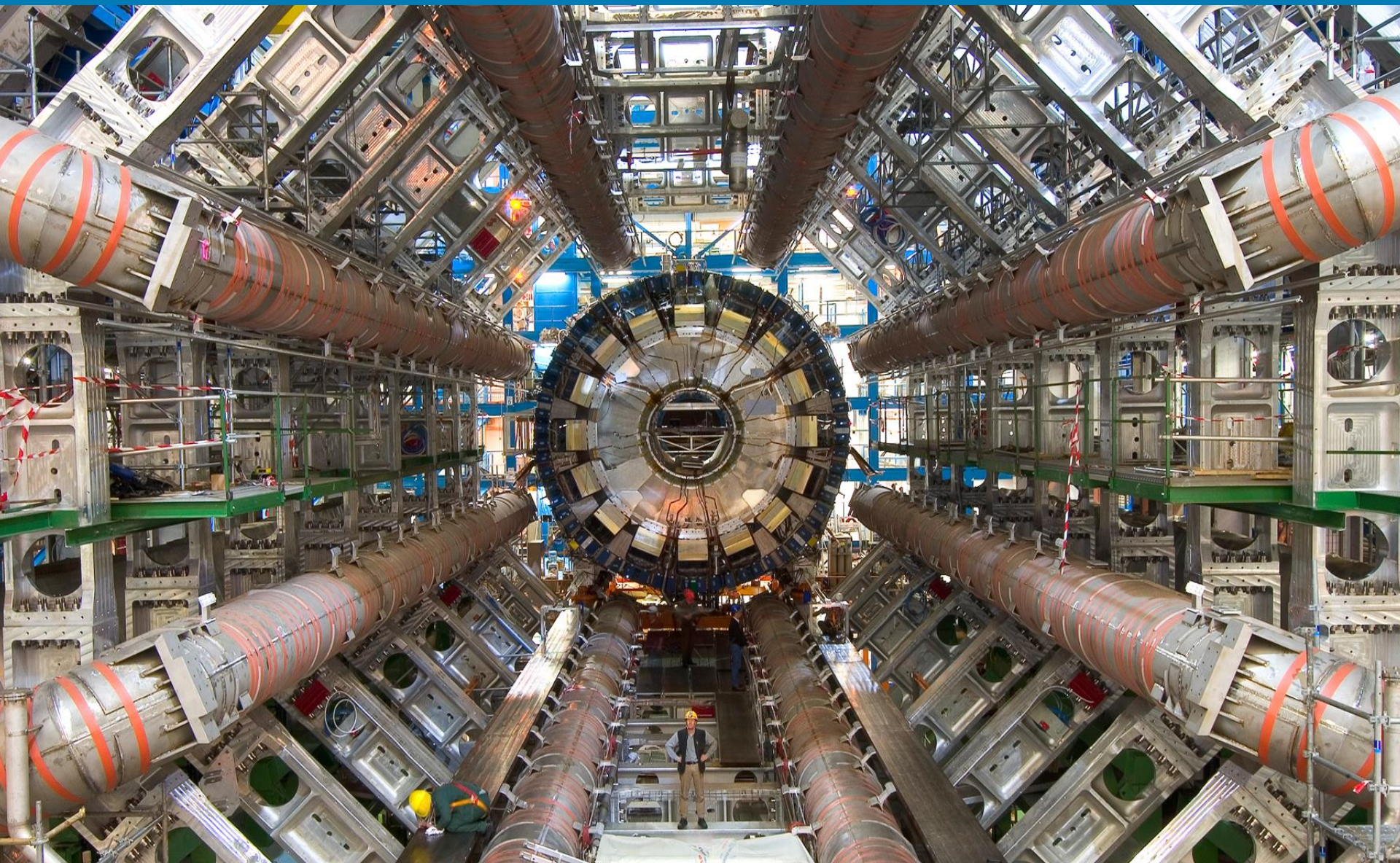
Maurizio Bona, CERN

Maurizio.Bona@cern.ch





*“Try to imagine the whole universe beginning to ring and resound.
These are no longer human voices, but planets and suns revolving”.*
J.M.







- **Introduction to CERN**
- **The world of science**
- **CERN's advocacy for science in the international Community**
- **Science for Peace**



- **International Geneva :**

- . 33 international Organization (21 intergovernmental) ; ~ 250 NGOs
- . 173 States with permanent Missions; Diplomatic Club
- . ~ 25000 int. civil servants (21500) and diplomats; ~ \$ 5.5 bn spent locally
- . Geneva: the **most active center for multilateral diplomacy in the world.**

- **Multilateralism :**

- . Historically: humanitarian, social, economical, normative
- . Science **is not in the focus** of the international debates
- . In the past CERN was **not fully profiting** of International Geneva (and vice versa)



The birth of CERN

- The CERN “parents”

A group of farsighted **scientists, politicians, diplomats.**

- CERN’s main objectives

- . Resume the dialogue after World War II among former belligerent European Countries, and beyond.
- . Carry out **excellent** scientific programmes.



The first 60 years of CERN

- The CERN Convention (signed in 1953)

“The Organization shall have no concern with work for military requirements and the results of its experimental and theoretical work shall be published or otherwise made generally available”

- 30 years later ...

“I hope that the scientists at CERN will remember that they have other duties than exploring further into particle physics. They represent the combination of centuries of investigation and study... to show the power of human spirit. So I appeal to them not to consider themselves as technicians ...but... as guardians of this flame of European unity so that Europe can help preserve the peace of the world. ”

Prof. I. Rabi, US (celebrations for 30th anniversary of CERN, 1984)



CERN in a nutshell

- **Personnel and budget**

- . ~ 2300 staff + ~ 1400 other paid persons
- . ~ 12500 scientific “users”
- . Budget (2016) ~ 1000 M CHF. It is 100% “regular budget”

- **Membership**

- . 21 Member States; 3 Associate Member States; 7 Observers
- . Membership enlarged to non-European States in 2010
- . 2 States in accession to membership. Applications from 8 States.
- . Observer status will be phased-out for Countries

- **Host States**

- . Switzerland (official seat: Geneva) and France



CERN in a nutshell

- **Accelerators and infrastructures**

- . Under the financial & technical responsibility of the Organization.

- **Experimental collaborations**

- . Hundreds (thousands) researchers from Member States and non-Member States.

- . Autonomously organized, including finance; placed under DG's authority. Top-down and bottom-up approach.

- **The scientific programme**

- . Decided by Council on proposal by the Scientific Policy Committee



CERN in a nutshell

- **The Director-General**

- . Five-years mandate. Successor appointed one year before taking office
- . Directorate consisting of Director-General plus four Directors (2016)

- **The Council**

- . Meets four times a year. The Director-General serves as the Secretary.

- **Council's subordinate bodies**

- . Finance Committee ; Scientific Policy Committee.
- . Pension Fund Governing Board; TREF (tripartite).



CERN SCIENTIFIC POLICY COMMITTEE (2014)

CHAIR

NAKADA Tatsuya EPFL, CH

EX-OFFICIO MEMBERS

ELSEN Eckhard Chairman, LHCC, DE

BLAUM Klaus Chairman, INTC, DE

KRAMMER Manfred Chairman, ECFA, AT

VALLEE Claude Chairman, SPSC, FR

ALSO PRESENT

HEUER Rolf-Dieter Director-General

ZALEWSKA Agnieszka President of the Council

JAMIESON Charlotte Chairman of Finance
Committee

MEMBERS

DIEMOZ Marcella INFN, Roma ELLIS Richard
Keith Fermilab, USA GAVELA Belen UAM,
Spain HARRISON Michael LBNL, USA HUYSE
Mark KUL, BE

LE DIBERDER François LAL Orsay

MURAYAMA Hitoshi FR IPMU Tokyo; LBNL

REDLICH Krzysztof Wroclaw Univ, PL

RIVKIN Leonid EPFL/PSI, CH

RODRIGO Teresa IFCA, ES

ROE Natalie LBNL, USA

RUBAKOV Valéry INR, RU

SPIERING Christian DESY, DE

TOKUSHUKU Katsuo KEK, JP

WARK David Imperial College, UK

WYATT Terry Univ. of Manchester, UK



The world of science

- . Inclusive by its nature.
- . Individuals are evaluated by peers based on concrete results.
- . Results evaluated by the international community; scientific method.
- . **Excellence** is required.
- . Results are achieved only if all participants share the **same objective**.



Science at CERN; the CERN model

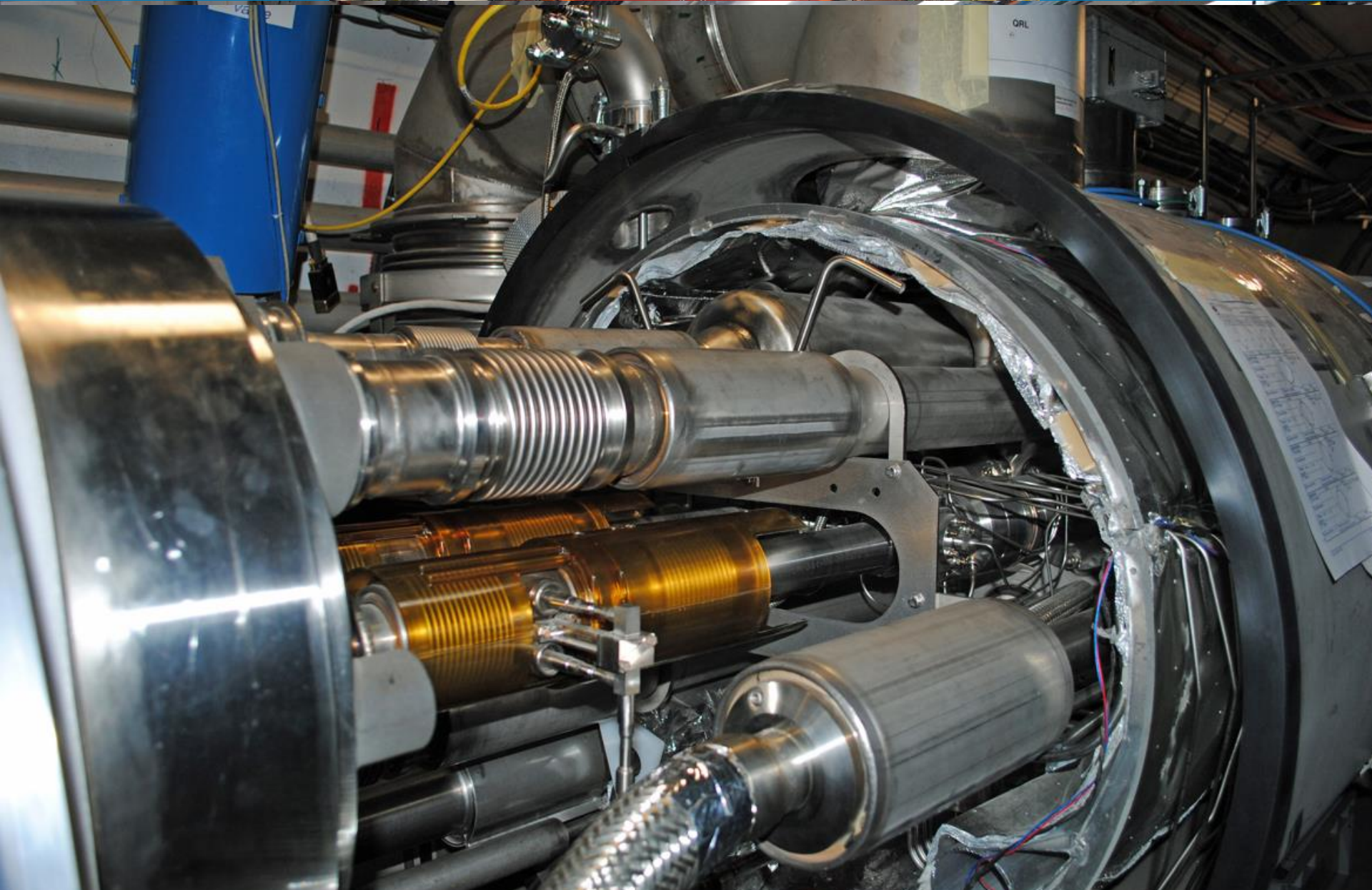
- . A simple but strong Convention, excluding military applications.
- . Researchers from everywhere, including from non-Member States.
- . International experimental collaborations, where CERN is minority.
- . Open access philosophy, in all fields.
- . Inclusion: no barriers of nationality, age, religion, gender etc ...
- . Collaboration and competition : “**Co-opetition**”.
- . **Stay away from politics.**

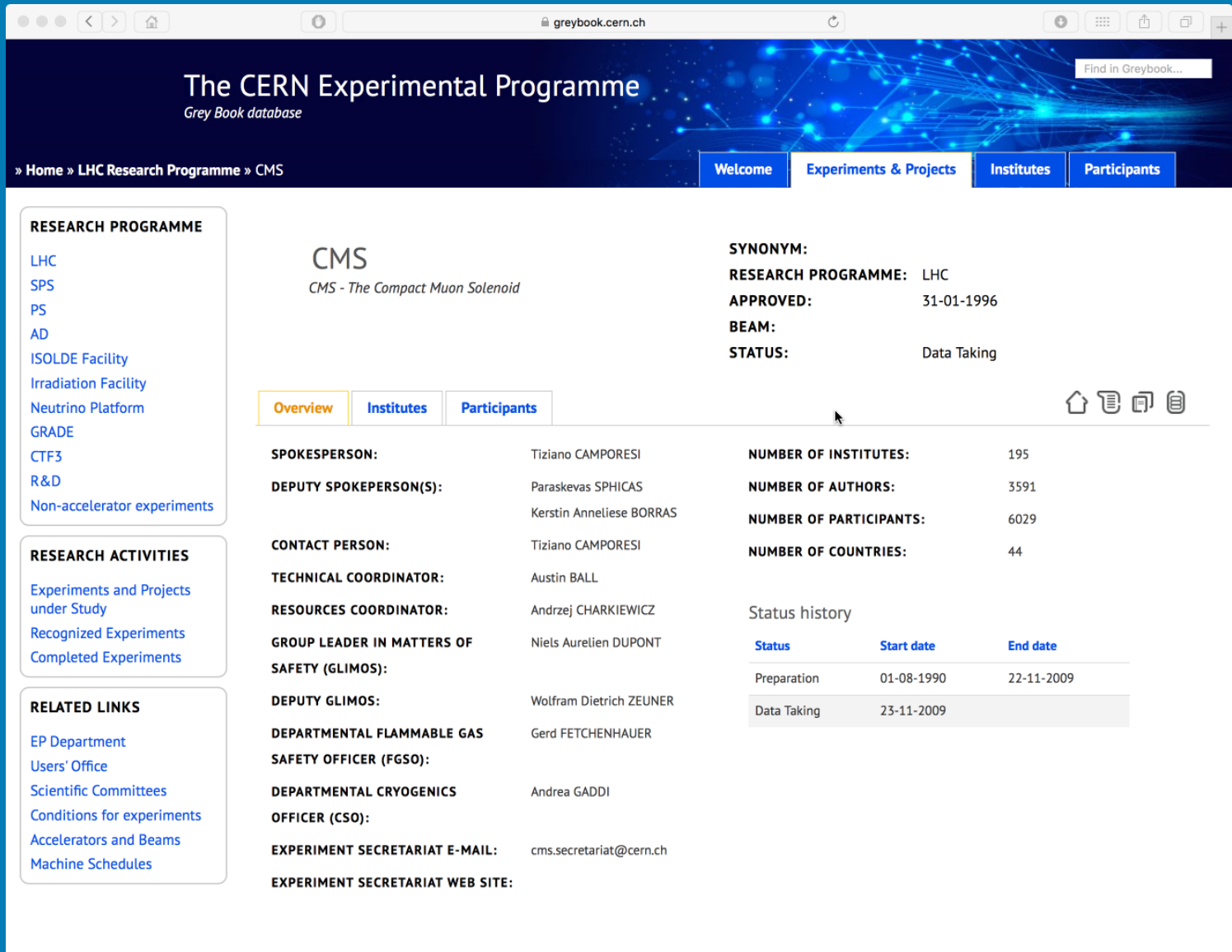
and, mainly



. Excellence

. Trust







CERN Accelerating science

Sign inDirectory

The CERN Experimental Programme

Grey Book database

Find in Greybook...

» Home » LHC Research Programme » CMS

WelcomeExperiments & ProjectsInstitutesParticipants

RESEARCH PROGRAMME

LHC
SPS
PS
AD
ISOLDE Facility
Irradiation Facility
Neutrino Platform
GRADE
CTF3
R&D
Non-accelerator experiments

CMS

CMS - The Compact Muon Solenoid

SYNONYM:

RESEARCH PROGRAMME: LHC

APPROVED: 31-01-1996

BEAM:

STATUS: Data Taking

OverviewInstitutesParticipants

Name	Parent Name	Town	Country	Team Leader & Deputy Team Leader(s)
			China	
Institute of High Energy Physics (IHEP)	Chinese Academy of Sciences	Beijing	China	(TL) CHEN, HESHENG (DTL) JIANG, CHUNHUA (DTL) CHEN, GUOMING
Peking University		Beijing	China	(TL) MAO, YAJUN (DTL) QIAN, SIJIN (DTL) BAN, YONG
Tsinghua University		Beijing	China	(TL) WANG, YI (DTL) XIE, BO
Beihang University		Beijing	China	(TL) SHEN, CHENGPING (DTL) YUAN, LI

Total: 4

RESEARCH ACTIVITIES

Experiments and Projects under Study
Recognized Experiments
Completed Experiments

RELATED LINKS

EP Department
Users' Office
Scientific Committees
Conditions for experiments
Accelerators and Beams
Machine Schedules



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NameParent NameTownCountryTeam Leader & Deputy Team Leader(s)

Taiwan

Department of Physics

National Central University

Jhongli City

Taiwan

(TL) KUO, CHIA-MING
(DTL) YU, SHIN-SHAN

National Taiwan University (NTU)

Taipei

Taiwan

(TL) HOU, GEORGE WEI-SHU
(DTL) LU, RONG-SHYANG
(DTL) CHEN, KAI-FENG

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OverviewInstitutesParticipants

NameParent NameTownCountryTeam Leader & Deputy Team Leader(s)

India

Nuclear Physics Division

Bhabha Atomic Research Centre

Mumbai

India

(TL) PANT, LALIT MOHAN
(DTL) SHUKLA, PRASHANT
(DTL) DUTTA, DIPANWITA

Tata Inst. of Fundamental Research (TIFR)

Mumbai

India

(TL) AZIZ, TARIQ
(DTL) DUGAD, SHASHIKANT
(DTL) MOHANTY, GAGAN BIHARI

Department of Physics & Astrophys.

University of Delhi

Delhi

India

(TL) RANJAN, KIRTI
(DTL) NAIMUDDIN, MD

Department of Physics

Panjab University

Chandigarh

India

(TL) SINGH, JASBIR
(DTL) LAL, MANJIT KAUR
(DTL) BHATNAGAR, VIPIN

Saha Institute of Nuclear Physics

Kolkata

India

(TL) SARKAR, SUBIR
(DTL) BHATTACHARYA, SATYAKI



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STATUS: Data Taking

OverviewInstitutesParticipants

NameParent NameTownCountryTeam Leader & Deputy Team Leader(s)

Pakistan

National Centre for Physics (NCP)

Islamabad

Pakistan

(TL) HOORANI, HAFEEZ UR REHMAN

Total: 1

M. Bona – IPU, June 2016





Science for peace and development

CERN is actively engaged to promoting:

- . The role of science for the sustainable development of society : knowledge; technology and innovation; education.
- . Science as enabler for dialogue and peace.





Observer status at the UN, Dec 2012



CERN and the UN 2030 Agenda on Sustainable Development

Preparation of the 2030 Agenda

- Input on science via ECOSOC and UN High Level Political Forum
- Main messages: . Support to research, including basic research
. STEM education

Implementation of the 2030 Agenda

- Contribution to the “Technology Facilitation Mechanism”.
- Offer to the UN: . CERN knowledge on science, technol., innovation
. CERN IT infrastr. for pilot projects (Big Data).
- Description and discussion of the “CERN model”.



CERN (and science) for Peace

In the recent years CERN organized:

- Various initiatives like conferences, workshops, with other partners (Governments, Academies, other international organizations).
- Event with the UN in Geneva on the CERN model for global public goods, including science for peace (*Geneva, Nov. 2015*).
- Event on “Science for Peace and Development” at the UN Headquarters in New York (*New York, Oct. 2014*).



"CERN: Sixty years of Science for Peace and Development" - United Nations, New York, Oct. 2014



SESAME - SYNCHROTRON-LIGHT FOR EXPERIMENTAL SCIENCE AND APPLICATIONS IN THE MIDDLE EAST

Amman, Jordan



SESAME Members





Teacher Training Schools

- . Target: high school teachers.
- . Goal: stimulate vocation of young people, in particular females, to invest in scientific university studies.
- . Modules originally developed for Member States teachers, progressively extended also to teachers from non-Member States.
- . Particular attention to specific regions, i.e. Africa with UNESCO.
- . Cost of a school ~ 60 k\$ (~ 2 k\$/teacher: travel, lodging, subsistence)



CERN Teacher Programmes

Lectures



Discussions



Working groups



Visits



Hands-on workshops





CERN Teacher Programmes

National Teacher Programmes in the language of the country
focus on visits and lectures

4 – 6 days

International Teacher Programmes in English
focus on visits and lectures

new starting in 2017 2 weeks

International Teacher Programmes in English
focus on collaboration

3 weeks



Inspiring science education in the Middle East | CERN

CERN welcomed 54 science teachers from 32 countries for the High School Teachers Training Programme 2014. The teachers come from all over the world but the largest constituent this year is the Middle East with eight teachers from...

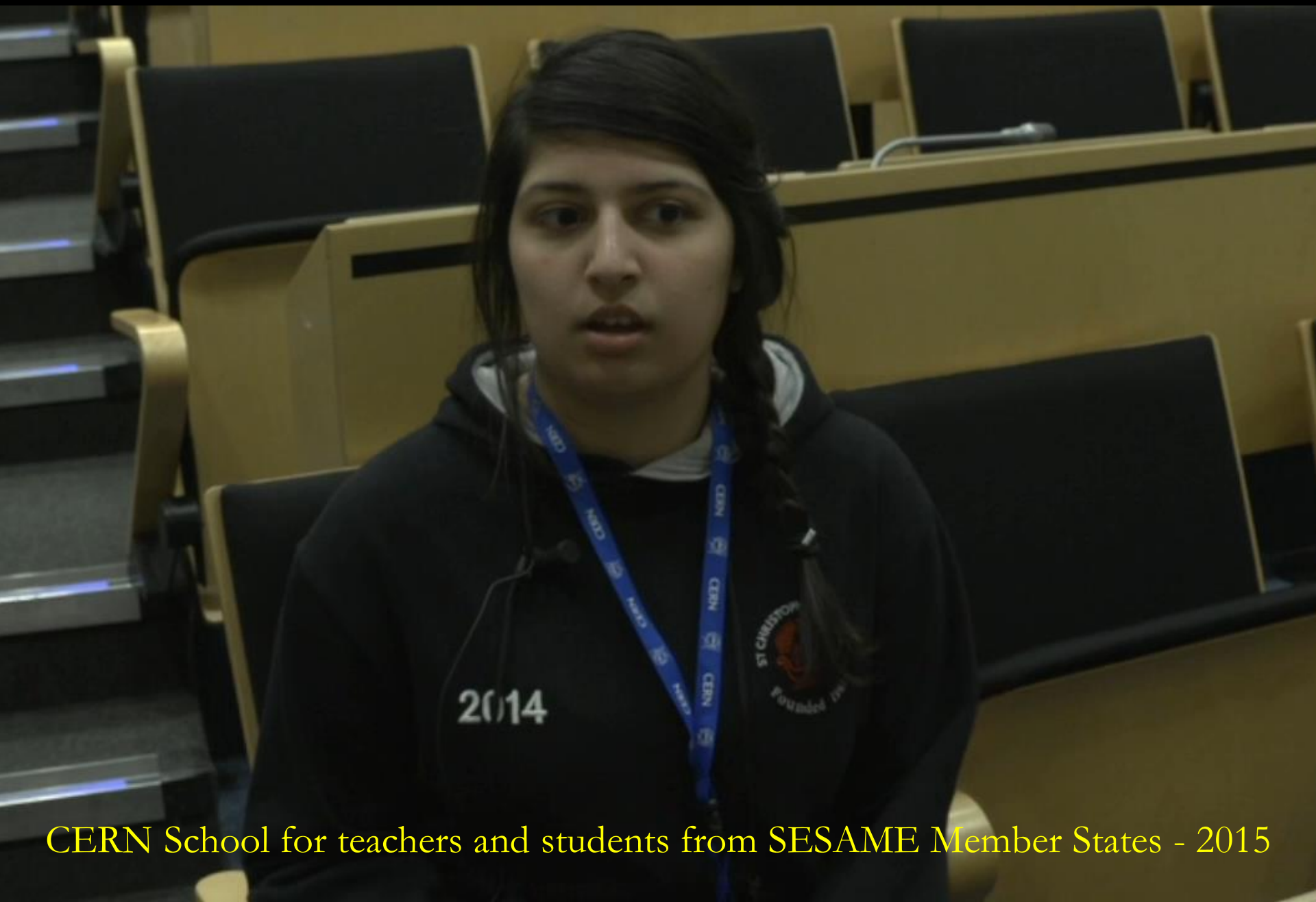
HOME.WEB.CERN.CH



CERN-UNESCO Schools for Teachers from SESAME Member States

- . One School for Teachers (and students) from SESAME Member States was held at CERN in September-October 2015.
- . Great interest to repeat the experience: discussions with Switzerland and UNESCO for funding. Are others possibly interested to finance?
- . Should money become available, 36 teachers/School could be trained.
- . Should money become available, the next School could be held at the beginning of 2017.
- . CERN-UNESCO-IPU School: a dream?





CERN School for teachers and students from SESAME Member States - 2015



Great, but finally:

**What is the concrete contribution of science,
and of CERN in particular, to peace?**



Science for peace

- . In its 60 years of life CERN, with its model, was a positive example of a worldwide platform for dialogue and peace through science.
- . SESAME, based on the same model, is profiling itself as a platform in the Middle East for excellent science as well as for dialogue and peaceful cooperation.

Questions:

- . Can these examples be exported to fields other than science?
- . Can such models and platforms be used to tackle and solve basic societal needs, like ensuring **water, energy, food** etc ... ?



Some characteristics of science

- . Science is by its nature **neutral**.
- . Science promotes and requires **trustful** cooperation.
- . Science is one of the few real **universal languages**.

Question:

- . **Does science bring peace?**



West-Eastern Divan Orchestra

founded by Daniel Barenboim - Edward Said, 1999

Musicians from :

Syria

Turkey

Egypt

Israel

Palestine

Jordan

Lebanon

Spain

Excellence

Sharing the same objective

West-Eastern Divan Orchestra

founded by Daniel Barenboim - Edward Said, 1999



“The West-Eastern Divan Orchestra has been sometimes described in a very flattering way for us as an “orchestra for peace”. Let me tell you something: **this is not going to bring peace.** What it can bring is **understanding**, the **patience**, the **courage**, and the **curiosity to listen to the narrative of the other**”

Daniel Barenboim, Ramallah concert, August 2005.



Question:

Does science bring peace?



Question:

Does science bring peace?

My personal answer:

Science itself **cannot bring peace.**

What it can bring is **understanding**, the **patience**, the **courage**, and the **curiosity** to **listen to the narrative of the other.**



THANK YOU FOR YOUR ATTENTION !