



# CERN Hungarian Teacher Programmes

Inspiring the next generation of Hungarian scientists

Mick Storr

Head CERN Teacher Programmes  
and  
Visits Service



# CERN Strategic Missions

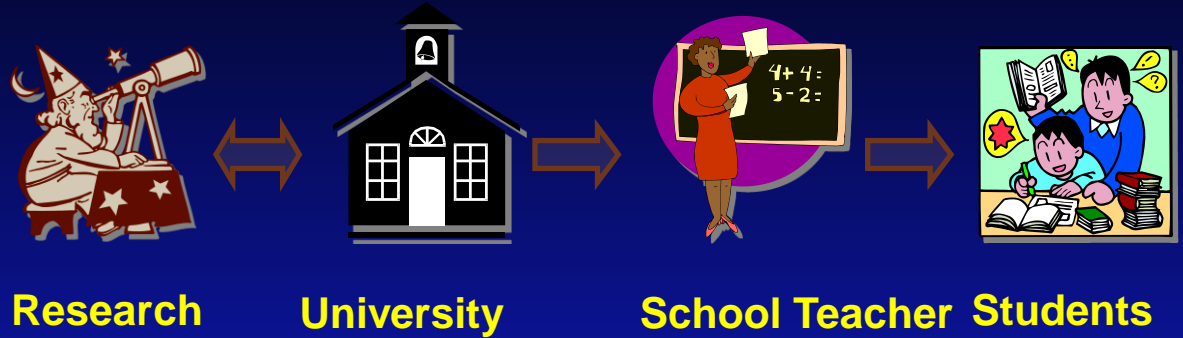
- Fundamental research
  - Where do we come from ?
  - What are we made of ?
  - Where are we going ?
- Education - Training the scientists of tomorrow
  - Inspiring young people to study science
- Technology Transfer
  - Sharing knowledge and skills
- International Collaboration
  - Working together with a common objective



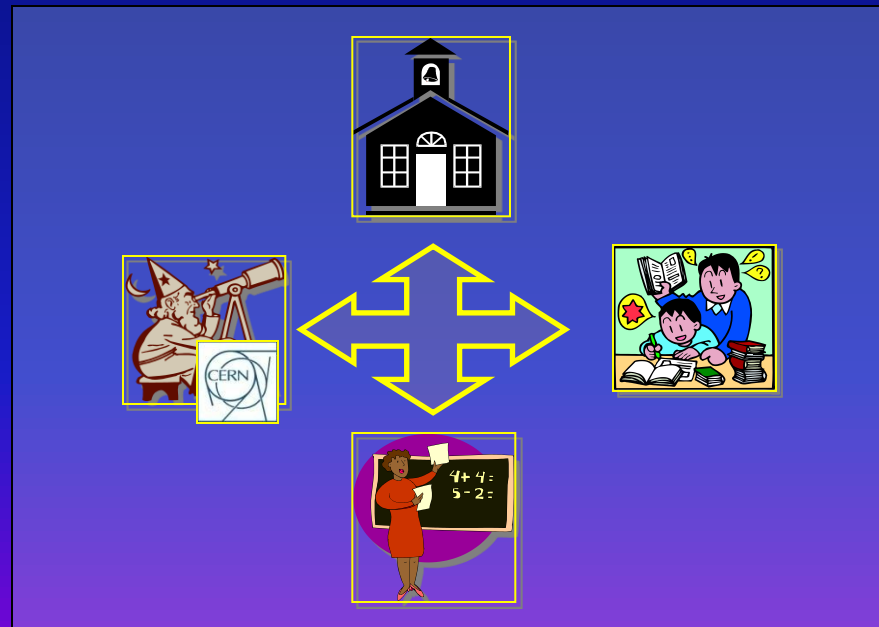
# Objective of Teacher Programmes

## To bring modern research closer to schools

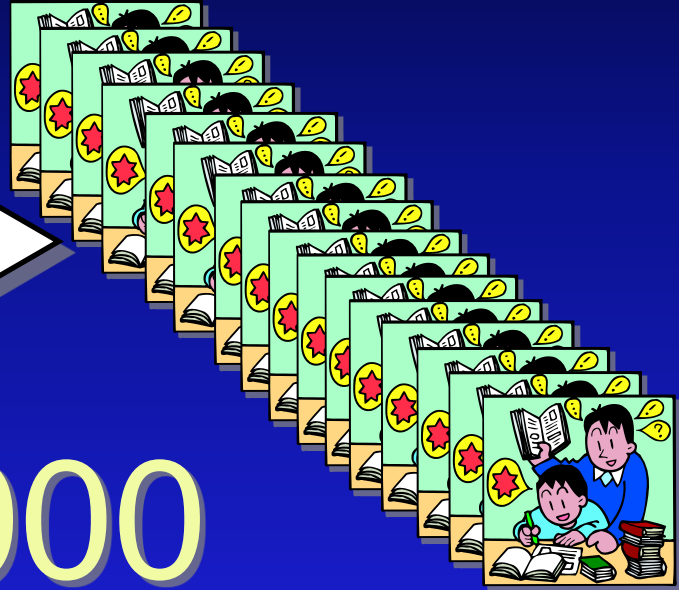
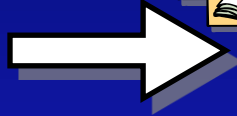
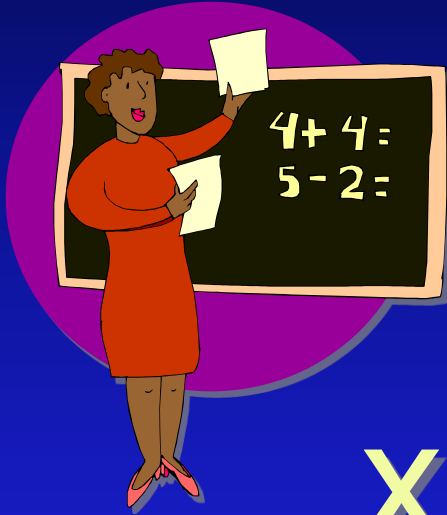
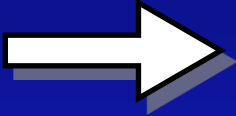
OLD



NEW



# Looking for multiplicative factors



x 1000

School Teacher

School Students



# What are we trying to achieve with the help of physics teachers ?

1: RAISE AND MAINTAIN THE INTEREST OF STUDENTS IN MODERN SCIENCE

Motivate them to continue scientific education at school  
Help them to better understand the physical world

## **Improve scientific literacy**

2: INSTIL A FEELING OF MYSTERY AND DISCOVERY POTENTIAL

Motivate students to take up physics at universities

## **Prepare the future generation of physicists**

# **SCIENCE IS ALIVE !**

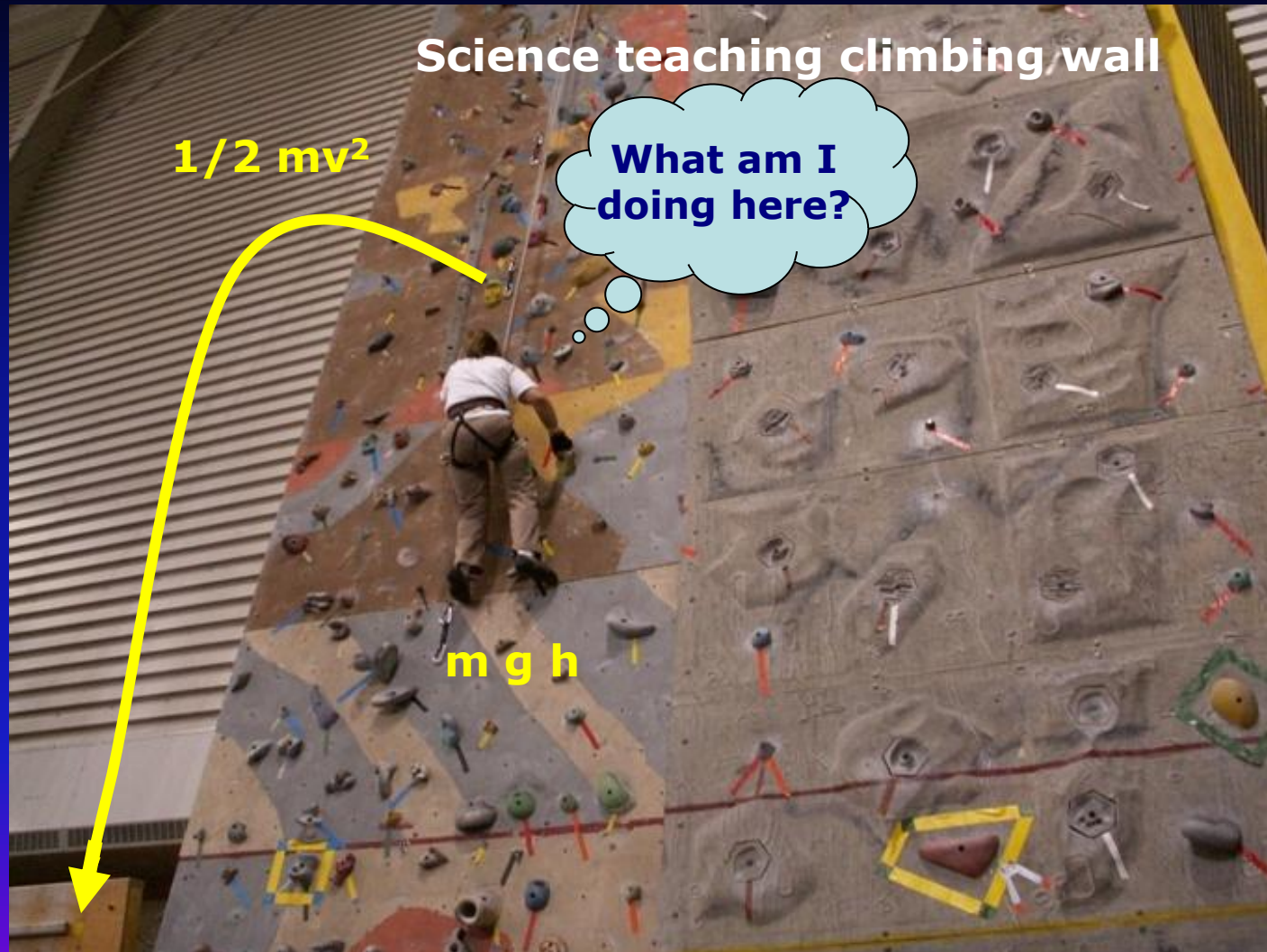


# How researchers view science



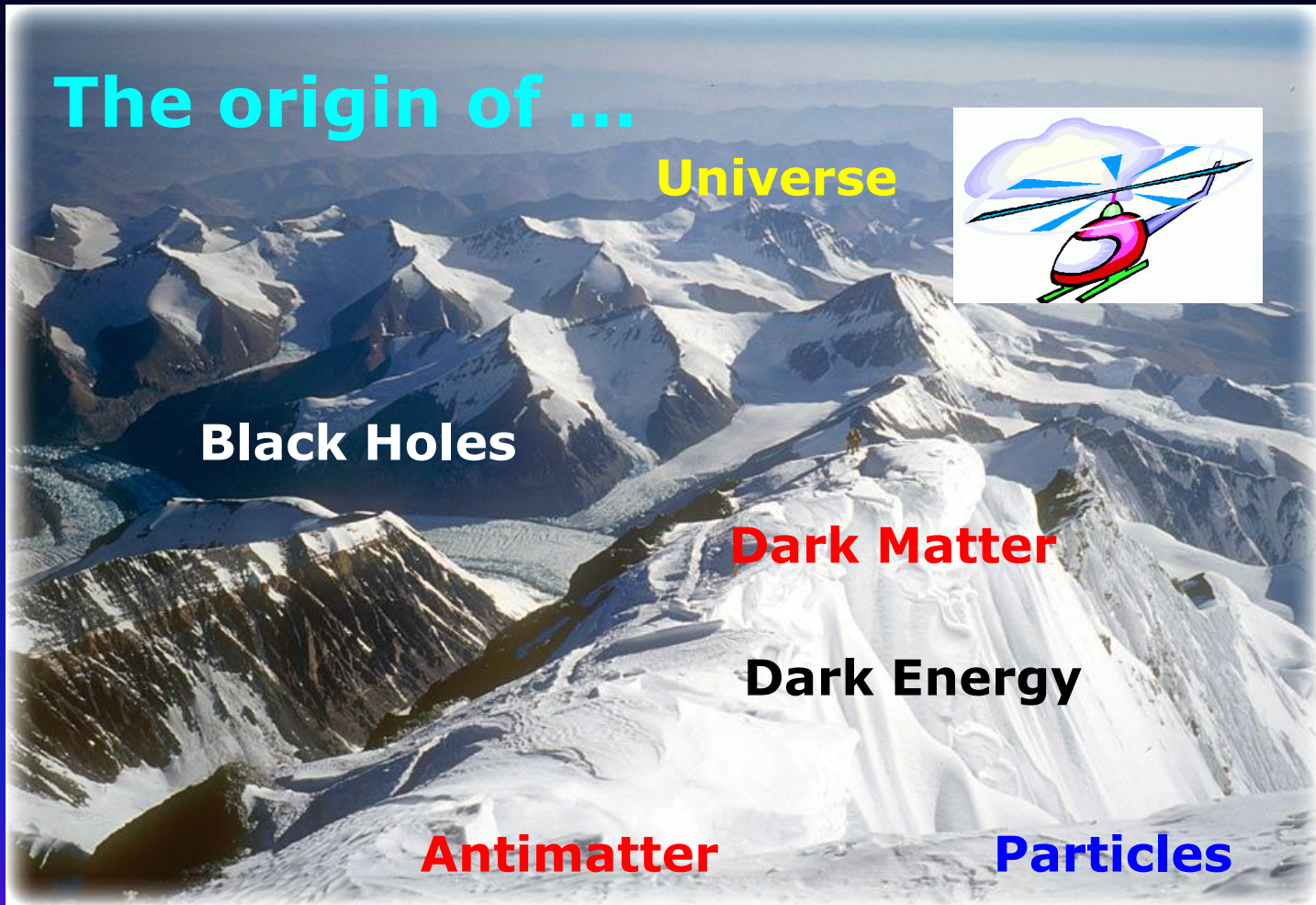


# How school students view science





# Take students on a sight-seeing tour ...



Link modern physics to school curriculum





# Residential Teacher Programmes

## Basic content

- Lectures
  - Introductions to CERN, Particle Physics, Cosmology, the LHC Experiments, Particle Accelerators, Medical Applications of Particle Physics, and the GRID
- Visits to experimental facilities
- Hands-on activities
- Working group activities
- Opportunities to meet working research physicists in a variety of informal settings.

All lectures are recorded, web archived and made publicly available



# 3 - week Summer School



30-40 participants, mainly from member states - held in English

**Fully funded** by CERN (travel, accommodation, food, lectures)

**Lectures:** Particle physics, cosmology, accelerators, detectors

**Seminars:** Antimatter, medical applications, ...

**Working Groups:** Bubble chambers, teacher lab, stories, ...

**Guided Tours:** LHC experiments, Antimatter factory

**Social events** - networking - Alumni contacts

3 - 23 July 2010



# 3-day weekend programme

**≤ 50 participants** (mainly member states)

**In English**

**Partially funded** by CERN (accommodation)

**Lectures** on:

particle physics and cosmology

accelerators and detectors

antimatter, medical applications

**Guided tours:**

LHC experiments

Antimatter Factory

End of November 2010



# 1-Week Programmes

**30 - 50 participants** (from same country or language group)

**In the language of the participants**

**No course fee, but external funding for travel, accommodation, subsistence**

**Goal: 20+ programmes per year**

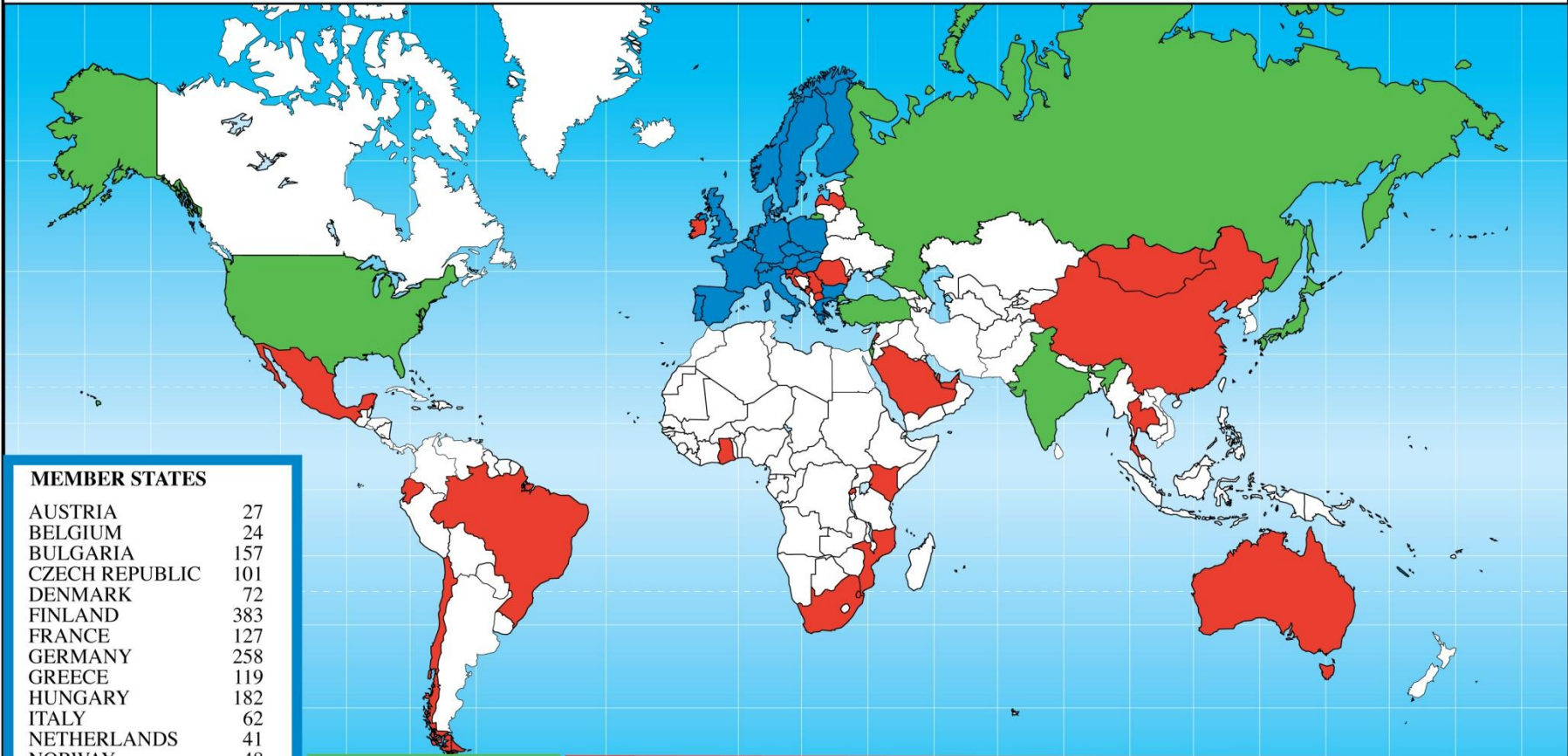
**In collaboration with teachers and scientists from member states**

**Funding:** teacher education funds, ministries, local authorities, foundations

**Since 2006: 5 sessions Hungarian Teacher Programme**

**Next Hungarian session – August 2011**

# CERN Teacher Programme Participants 1998 - 31 July 2010



## MEMBER STATES

AUSTRIA	27
BELGIUM	24
BULGARIA	157
CZECH REPUBLIC	101
DENMARK	72
FINLAND	383
FRANCE	127
GERMANY	258
GREECE	119
HUNGARY	182
ITALY	62
NETHERLANDS	41
NORWAY	48
POLAND	460
PORTUGAL	167
SLOVAKIA	189
SPAIN	168
SWEDEN	79
SWITZERLAND	12
UNITED KINGDOM	567

## OBSERVER STATES

INDIA	2
ISRAEL	1
JAPAN	2
RUSSIA	48
TURKEY	2
USA	51

## OTHERS

AUSTRALIA	1	IRELAND	3	MONTENEGRO	13	SLOVENIA	21
AZERBAIJAN	1	KENYA	1	MOZAMBIQUE	5	SOUTH AFRICA	6
BRAZIL	12	LATVIA	1	QATAR	1	SWAZILAND	1
CHILE	3	LEBANON	1	ROMANIA	7	THAILAND	2
CHINA	1	MACEDONIA	11	RWANDA	7	U.A.E.	1
CROATIA	1	MALTA	36	SAUDI ARABIA	1		
ECUADOR	1	MEXICO	5	SERBIA	10		
GHANA	2	MONGOLIA	1	SINGAPORE	2		

**3243**

**106**

**158**



# Outcome

- Newly inspired, motivated and confident teachers
- Inspire and motivate students
- Communicate with their colleagues
- Communicate with the general public
- Act as ambassadors for science, physics, particle physics, CERN

**Excellent examples among  
the many Hungarian  
teachers who have attended  
our programmes**



# What Next ?

- Please complete the evaluation sheets
- Think how you can fulfill your ambassador role
- Consider
  - Bringing your students to CERN
  - Holding a video conference with us
- Keep in contact
  - With each other
  - With the network of CERN Hungarian teachers
  - With CERN



# Arthur C. Clarke

Author of 2001 : A Space Odyssey

- “When a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very probably wrong.” •
- “The only way of discovering the limits of the possible is to venture a little way past them into the impossible.”
- “Any sufficiently advanced technology is indistinguishable from magic.”

**Our goal, with the help of teachers, is to bring a little of the magic of CERN into the classroom**





# Thank You

- The pioneers
  - Csaba Sukosd, Beata
- The sponsors
- Hungarian Physicists (in Hungary and at CERN)
  - Lecturers, guides, demonstrators
- CERN Hungarian Teacher Programme Organiser
  - Dezso Horvath
- CERN colleagues
- You
  - Interest, enthusiasm, energy, and dedication to students

**Congratulations - Hungary is leading the way**

**CERN is proud of its educational collaboration with Hungary**

**I am very proud to be a member of the Hungarian  
team **KOSZONOM !****