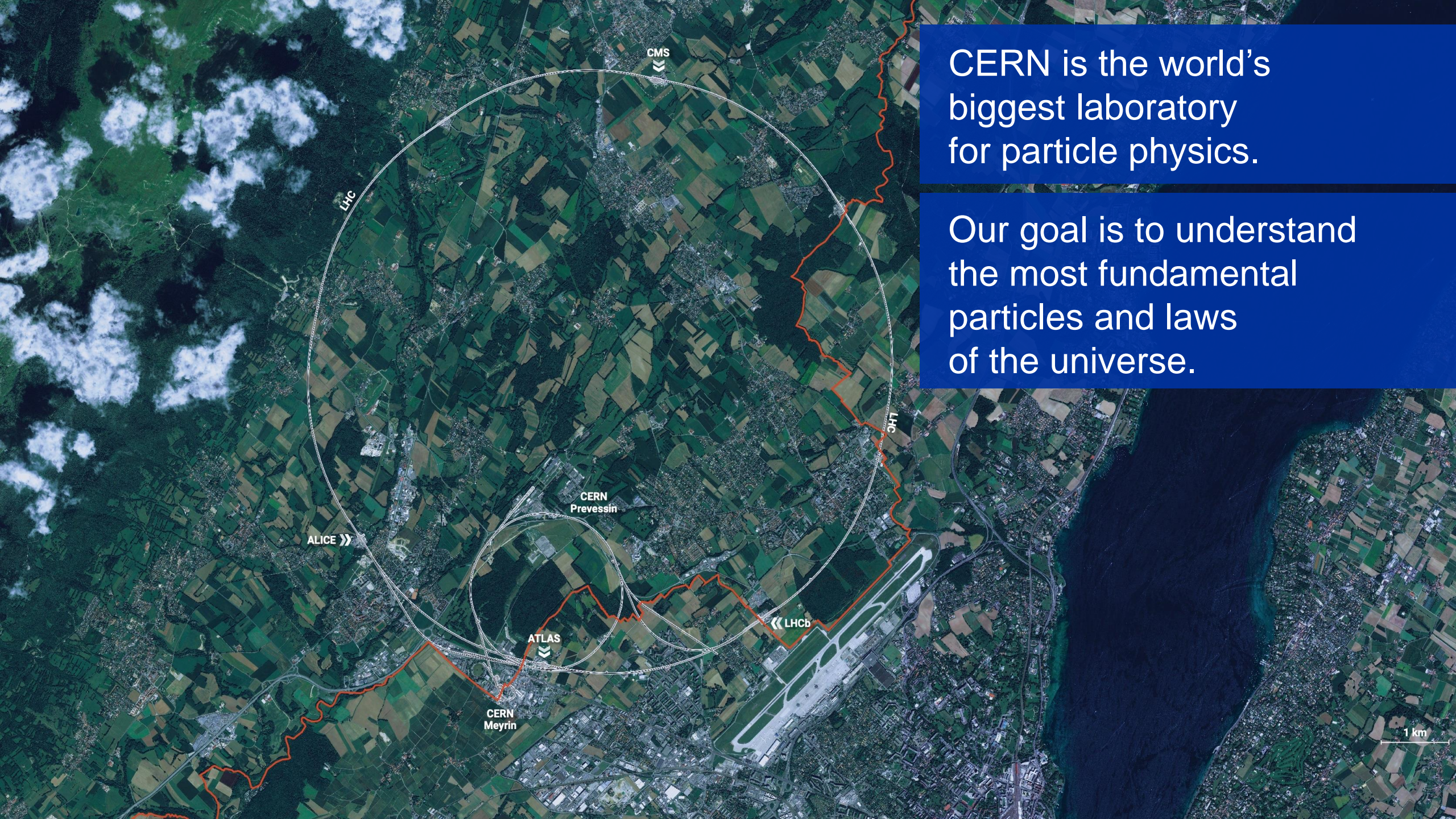


South Asian High Energy Physics Instrumentation Workshop
on Detector Technology and Applications
SAHEPI

Archana Sharma, Emmanuel Tsesmelis
CERN

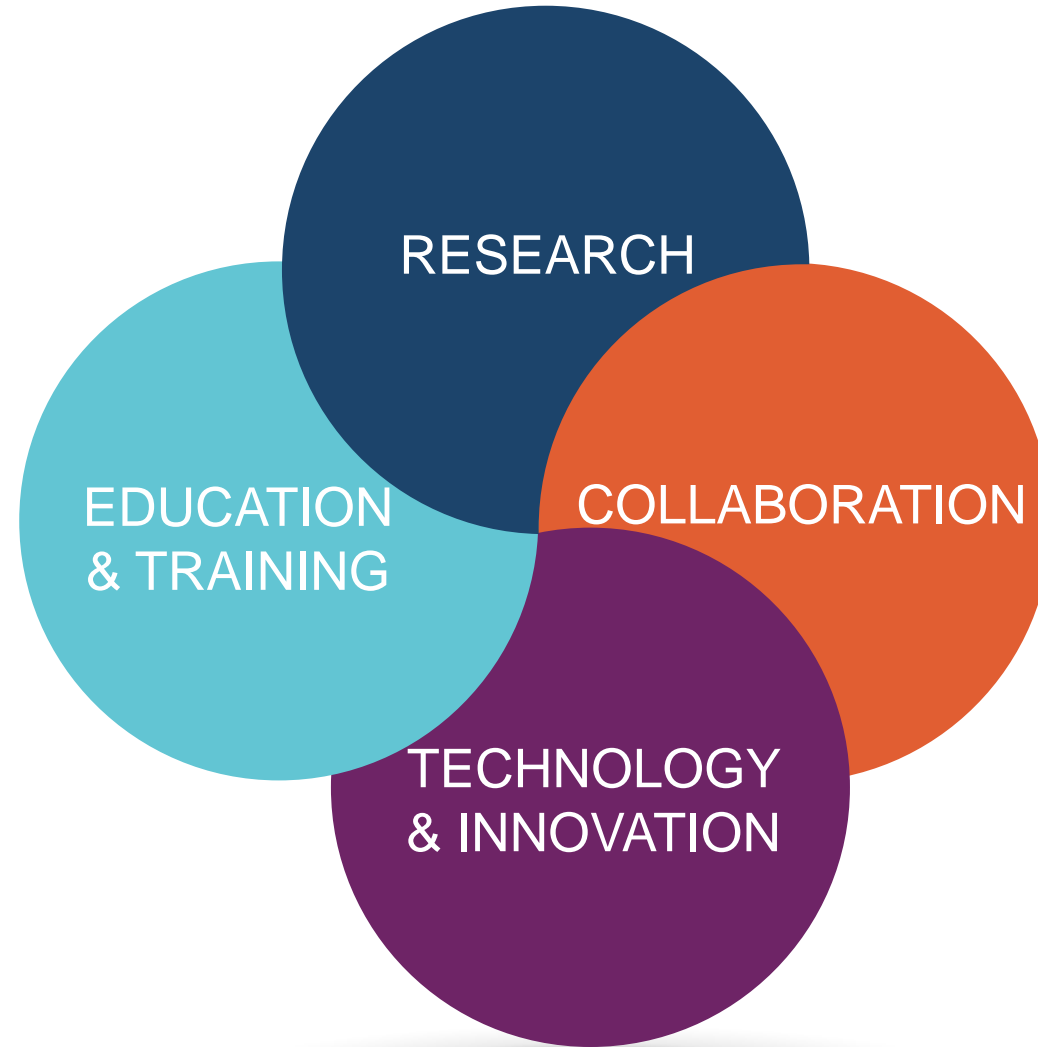
Briefing for Diplomatic Representatives of South Asian Countries
CERN, Geneva
9 July 2021



CERN is the world's biggest laboratory for particle physics.

Our goal is to understand the most fundamental particles and laws of the universe.

Four pillars underpin CERN's mission



Science for peace

CERN was founded in 1954 with 12 European Member States



23 Member States

Austria – Belgium – Bulgaria – Czech Republic
Denmark – Finland – France – Germany – Greece
Hungary – Israel – Italy – Netherlands – Norway
Poland – Portugal – Romania – Serbia – Slovakia
Spain – Sweden – Switzerland – United Kingdom

3 Associates Member States in the pre-stage to membership

Cyprus – Estonia – Slovenia

6 Associate Member States

Croatia – **India** – Lithuania – **Pakistan** – Turkey – Ukraine

6 Observers

Japan – Russia – USA
European Union – JINR – UNESCO

More than 50 Cooperation Agreements with non-Member States and Territories

Albania – Algeria – Argentina – Armenia – Australia – Azerbaijan – **Bangladesh** – Belarus – Bolivia
Bosnia and Herzegovina – Brazil – Canada – Chile – Colombia – Costa Rica – Ecuador – Egypt – Georgia – Iceland
Iran – Jordan – Kazakhstan – Latvia – Lebanon – Malta – Mexico – Mongolia – Montenegro – Morocco – **Nepal**
New Zealand – North Macedonia – Palestine – Paraguay – People's Republic of China – Peru – Philippines – Qatar
Republic of Korea – Saudi Arabia – **Sri Lanka** – South Africa – Thailand – Tunisia – United Arab Emirates – Vietnam

As part of the CERN family,
a global perspective for
scientific collaboration and
technological development
opens up

A laboratory for people around the world

Distribution of all **CERN Users** by the country of their **home institutes** as of **31 December 2020**



Geographical & cultural diversity
Users of **110 nationalities**
~ **23% women**

Member States **6632**

Austria 82 – Belgium 122 – Bulgaria 37 – Czech Republic 221
Denmark 35 – Finland 79 – France 794 – Germany 1185
Greece 138 – Hungary 67 – Israel 63 – Italy 1388
Netherlands 166 – Norway 78 – Poland 272 – Portugal 80
Romania 99 – Serbia 35 – Slovakia 66 – Spain 325
Sweden 96 – Switzerland 329 – United Kingdom 875

Associate Member States

in the pre-stage to membership **53**

Cyprus 11 – Estonia 26 – **Slovenia** 16

Associate Member States **390**

Croatia 38 – **India 151** – Lithuania 13 – **Pakistan 35**
Turkey 124 – Ukraine 29

Observers **3071**

Japan 211 – Russia 1021 – United States of America 1839



Other countries **1279**

Algeria 2 – Argentina 15 – Armenia 10 – Australia 23 – Azerbaijan 2 – Bahrain 2 – Belarus 26 – Brazil 108
Canada 196 – Chile 22 – Colombia 15 – Cuba 3 – Ecuador 4 – Egypt 14 – Georgia 35
Hong Kong 20 – Iceland 3 – Indonesia 7 – Iran 13 – Ireland 6 – Kuwait 2 – Latvia 6 – Lebanon 17
Malaysia 4 – Malta 3 – Mexico 49 – Montenegro 5 – Morocco 18 – New Zealand 11 – Oman 1
People's Republic of China 334 – Peru 2 – Puerto Rico 2 – Republic of Korea 132 – Singapore 3
South Africa 57 – **Sri Lanka 8** – Taiwan 50 Thailand 16 – United Arab Emirates 2

Status of CERN – South Asia Collaboration

Afghanistan
students

Bangladesh
ICA, ALICE
association, students

Bhutan
first contacts
established, SASEP-2

India
CERN Associate
Member, ALICE &
CMS Member, WLCG,
accelerator projects,
students & teachers,
SASEP-1

Maldives
first contacts
established

Mauritius
first contacts
established; host of
SAHEPI-3

Nepal
ICA, students &
teachers; host of
SAHEPI-1

Pakistan
CERN Associate
Member, ALICE &
CMS Member, WLCG,
accelerator projects,
students & teachers

Seychelles
first contacts
established

Sri Lanka
ICA, CMS
Member, students
& teachers; host of
SAHEPI-2

ICA = *International Cooperation Agreement*

WLCG = *Worldwide LHC Computing Grid*

SASEP = *South Asia Science Education Programme.*

Objectives of SAHEPI

Given the **growing momentum for particle physics** & related technologies in South Asia region.

SAHEPI provides platform for scientists, engineers and students from across the region **to share their experience and to build closer ties** across individual particle physics communities.

Identify practical steps to **increase intra-regional learning and collaboration**, e.g **exchange of researchers & students**.

Strengthen scientific cooperation between **CERN & the South Asia region**.

1st SAHEPI Workshop at Kathmandu University, Nepal, June 2017



SECOND BULLETIN

Upcoming deadline for Registration and Submission of Abstracts: 31 May 2017



<https://indico.cern.ch/event/645120/>

2nd SAHEPI Workshop in Colombo, Sri Lanka, 20-21 February 2019

SOUTH ASIAN HIGH ENERGY PHYSICS INSTRUMENTATION WORKSHOP ON DETECTOR TECHNOLOGY AND APPLICATIONS - SAHEPI - 2019
in partnership with CERN
19-20 FEBRUARY 2019, COLOMBO, SRI LANKA



Workshop webpage: <https://fos.cmb.ac.lk/sahepi2019>

Scientific Programme & Contributions:

The scientific community in South Asia are invited to participate in the 2nd South Asian High Energy Physics Instrumentation (SAHEPI) Workshop on Detector Technology and Applications in Colombo, Sri Lanka from Feb 19-20, 2019. The aim of the workshop is to bring together the members of the physics communities of South Asian countries to present highlights of their ongoing experimental programmes in collaboration with CERN and other international scientific projects. A review of the status, operation of the present facilities, scientific experimental programme and upgrades planned for the next few decades at CERN, along with an overview of societal applications of state-of-the-art technologies will be presented. One student from each country will have the opportunity to present talks and posters, and will be sponsored by CERN.

The two-day programme will consist of invited plenary and poster sessions.

Local Organizing Committee:
W.G.D. Dharmaratna (RUH), Upul Sonnadara (CMB), Kithsiri Jayananda (CMB), Nadeesha Wickramage (RUH), Himali Athaudage (MOSTR), Kalpanie Liyanage (RUH), K. Balashangar (ESN), Deshitha Wickramaratna (CMB) and Nimantha Perera (RUH)

International Advisory Committee:
Charlotte Warakulle (CERN), Emmanuel Tsismelis (CERN), Archana Sharma (CERN) and W.G.D. Dharmaratna (RUH)



<https://cmb.ac.lk/sahepi-2-2019/>

SAHEPI Participation

Brought together **physicists and policy makers** from the South Asia region & neighbouring countries and **representatives of CERN**.

Representation from many countries: Afghanistan, Bangladesh, Bhutan, India, the Maldives, Mauritius, Nepal, Pakistan, Seychelles & Sri Lanka.

For each of SAHEPI-1 and SAHEPI-2: total of around **70 participants**, more than **half of whom were students**.

South Asia Science Education Programme SASEP

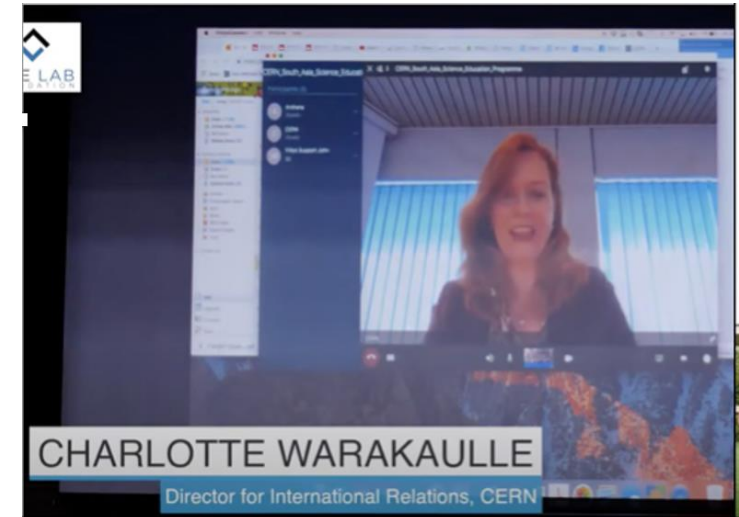


1st SASEP - New Delhi, 22-26 April 2019

Extension of SAHEPI on best-effort basis

Collaboration between CERN & International School of Geneva - **82 trainee teachers from Bhutan & India.**

Empower teachers with knowledge on **interdisciplinary skills in STEM** relating to experiments at CERN.



Relate hands-on STEM Workshops with **United Nations SDGs** (Sustainable Development Goals).

2nd SASEP to be held in Bhutan (postponed from 2020)



CERN and the Global Goals

SDG 3 - HEALTH

CERN helps to develop technologies that contribute to better healthcare for all, such as medical imaging and hadron therapy.

SDG 4 - EDUCATION

Education is one of CERN's core missions. We offer high quality programmes that inspire thousands of students, teachers and young researchers each year.

SDG 5 - GENDER

Diversity is a core value for CERN. Our diversity policy aims at leveraging the added value that comes from bringing together people of different nationalities, genders, professions and ages.

SDG 7 - ENERGY

CERN develops strategies for minimise the increase of energy consumed by the installations, increase energy efficiency and implement energy recovery.

SDG 9 - INNOVATION

CERN inventions are brought to industry through knowledge transfer, to have a positive impact on society and innovation.

SDG 16 & 17 - INTERNATIONAL COOPERATION

CERN is a successful model for international collaboration. CERN gathers researchers from all over the world, contributing to human knowledge and peace, for the benefit of all.



THERAPY

Accelerators provide particle beams for more targeted cancer treatment.



BEAMLINE FOR SCHOOLS COMPETITION

Students from the two winning teams spend a week at CERN to carry out their experiment using a CERN accelerator.



25 BY 25 DIVERSITY & INCLUSION INITIATIVE

First ever targets-based strategy to boost the nationality and gender diversity within the Staff and Fellows population.



HEATING LOCAL HOUSING

Heat recovered from CERN's accelerator cooling systems to heat a new residential area in the town of Ferney-Voltaire, benefiting up to 8000 people.



A MAGNET IN THE LHC TUNNEL

Exploring the universe requires new technologies and ingenious engineering to build the machines that explore physics at a new frontier.



SESAME

This new synchrotron light source in Jordan started operation in 2017. It is a unique collaboration between eight Middle East members, modelled on CERN's governance structure.

3rd SAHEPI Workshop

Online Only: University of Mauritius



Faculty of Science

Head of the Dept. Of Physics

Dr. BEEHARRY GIRISH KUMAR and his team

On

21st October 2021

Part I

Inauguration & welcome

Introductory talks

VIP panel discussion

Part II

Invited special science talks

Country presentations

Panel discussion

Communique

Part III

Evening public lecture

Virtual tour of Mauritius

Conclusions

Great **motivation and enthusiasm** of the participants at SAHEPI-1 & SAHEPI-2.

Representatives of **governments should note objective of raising awareness** at highest political level of growth in the community in the region & its value for broader societal development.

CERN will continue engaging with region to **build capacity & facilitate collaboration.**

Due to success of SAHEPI, discussions will continue in 2021 at **SAHEPI-3 (Mauritius).**



Thank you