



Perspectives on the Latin-American Involvement at CERN

***Symposium: Opportunities for Latin-American Cooperation
in High-Energy Physics with CERN***

CLAF, Rio, November 14th, 2025

Salvatore Mele, CERN

CAPACITY
BUILDING



BRAZIL'S
INTEGRATION



RESEARCH
PROGRAMME
PARTICIPATION



INSTITUTIONAL
COLLABORATION



INSTITUTIONAL COLLABORATION



Science for peace

CERN was founded in 1954 with 12 European Member States

(Belgium, Denmark, France, the Federal Republic of Germany, Greece, Italy, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom and Yugoslavia)

25 Member States

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

10 Associate Member States

Brazil – Croatia – Cyprus – India – Ireland – Latvia –
Lithuania – Pakistan – Türkiye – Ukraine

Chile signed AMS agreement in May '25
pending parliamentary ratification

4 Observers

Japan – United States of America
European Union – UNESCO

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

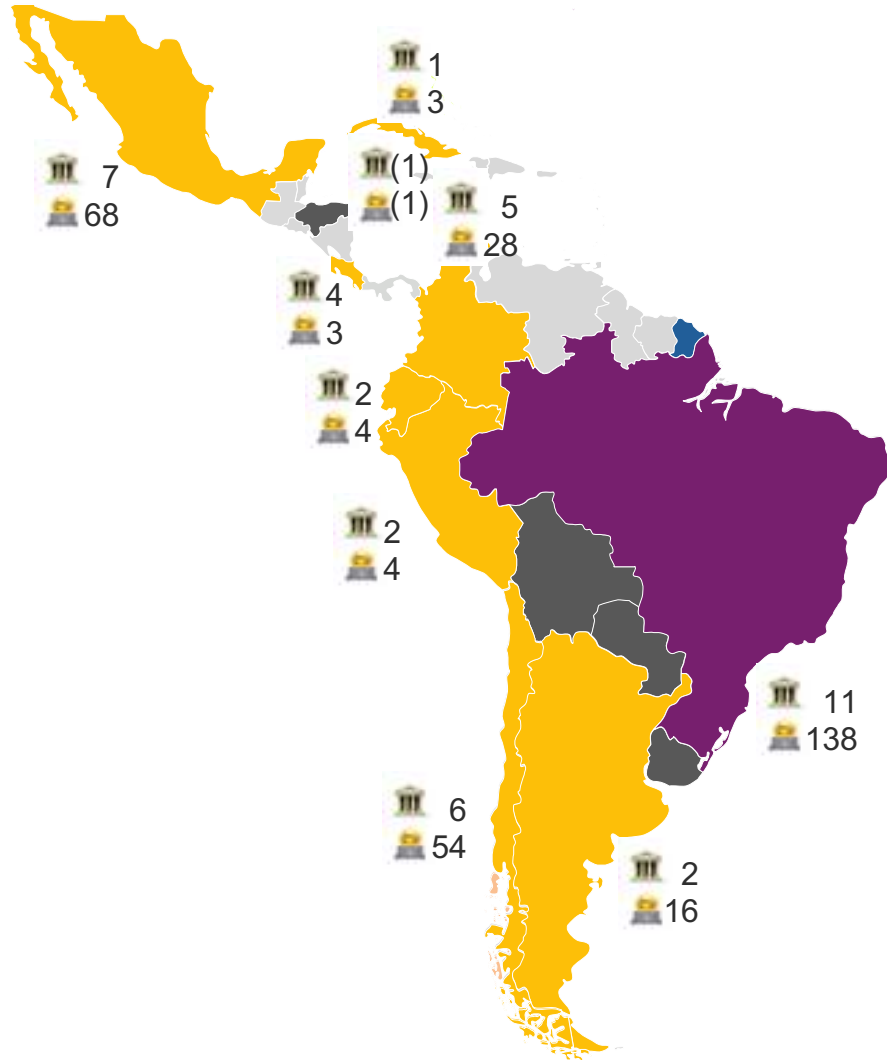
Albania – Algeria – Argentina – Armenia – Australia – Azerbaijan – Bangladesh – Bolivia
Bosnia and Herzegovina – Canada – Chile – Colombia – Costa Rica – Ecuador – Egypt – Georgia
Honduras – Iceland – Iran – Jordan – Kazakhstan – Lebanon – Malta – Mexico – Mongolia – Montenegro
Morocco – Nepal – New 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 – Uruguay – Vietnam



CERN's annual budget: ~1200 MCHF
(~ medium-sized European university),
fairly shared by Members and Associates
(90% discount) according to their economies.
Procurement and personnel opportunities

Employees (~56% of budget) Dec. '24:
2'704 staff (21% ♀), **1'181** fellows/graduates
Associates Sep. '24:
12'726 users, **1'513** other contributors

Latin America at CERN: institutional participation



Brazil became a CERN Associate Member State in March 2024.
Chile's Association agreement signed in May 2025, under ratification.

Since the 90's, CERN signed International Cooperation Agreements with 12 LA countries (including Brazil) and currently in force with: Argentina, Bolivia, Chile, Colombia, Costa Rica, Ecuador, Honduras, Mexico, Paraguay, Peru, Uruguay. Guatemala's signature next week.

Over 300 'users' from 45 institutes in 10 Latin American countries participate in the CERN experimental programme (2.5% of total) from Argentina, Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, Honduras (through Brazil), Mexico, Peru. Opportunities under discussion in Guatemala and Uruguay.

Not including O(10) proto-DUNE and DRD -only institutes

Argentina: Universidad de Buenos Aires, Universidad Nacional de la Plata.

Brazil: Centro Brasileiro de Pesquisas Físicas, Universidade Federal do Rio de Janeiro, Universidade do Estado do Rio de Janeiro, Universidade Estadual de São Paulo, Universidade Estadual de Campinas, Universidade de São Paulo, Pontifícia Universidade Católica do Rio de Janeiro, Universidade Federal da Bahia, Universidade Federal do ABC, Universidade Federal de Juiz de Fora, Universidade Federal do Rio Grande do Sul

Chile: Instituto Milenio SAPHIR, Universidad Técnica Federico Santa María, Pontificia Universidad Católica de Chile, Universidad Andrés Bello, Universidad de La Serena, Universidad de Tarapacá, Comisión Chilena de Energía Nuclear, Universidad San Sebastian

Colombia Universidad de Antioquia, Universidad Nacional, Universidad Antonio Nariño, Universidad de los Andes, Universidad del Valle, Pontificia Universidad Javeriana

Costa Rica: Universidad de Costa Rica, Instituto Tecnológico de Costa Rica, Universidad Nacional, Universidad Estatal a Distancia, Universidad Técnica Nacional

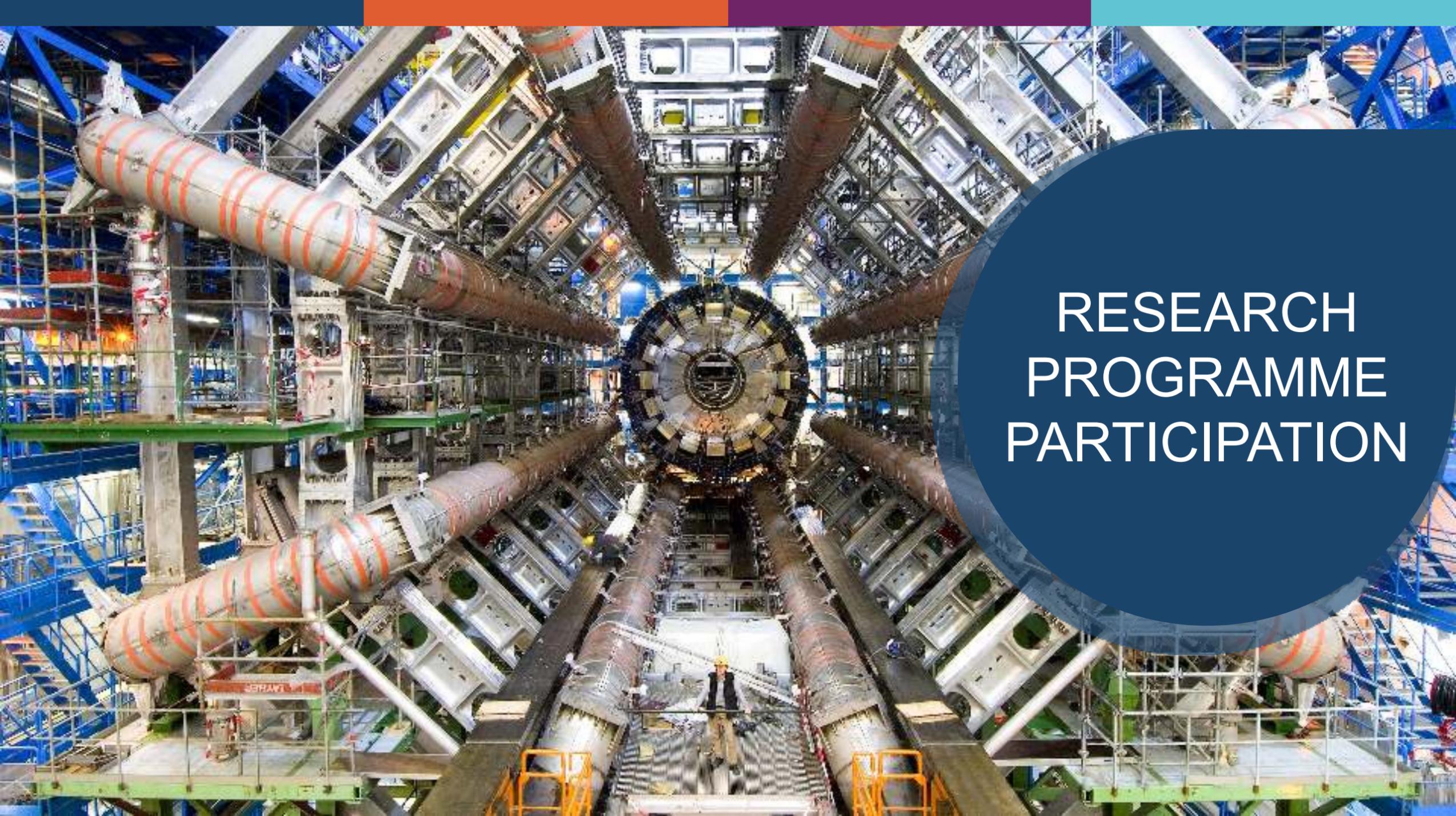
Cuba: Centro de Aplicaciones Tecnológicas y Desarrollo Nuclear

Ecuador: Universidad San Francisco de Quito, Escuela Politécnica Nacional

Mexico: Benemérita Universidad Autónoma de Puebla, Centro de Investigación y de Estudios Avanzados, Universidad Nacional Autónoma, Universidad Iberoamericana, Universidad Autónoma de San Luis Potosí, Universidad Autónoma de Sinaloa, Universidad de Sonora

Peru: Pontificia Universidad Católica de Perú, University of Engineering and Technology

'Users' are Researchers & technologists visiting CERN for >5% of their working time over a 5-year window. Local communities are in reality ~3-5 times larger (e.g. graduate students, engineers participating remotely)



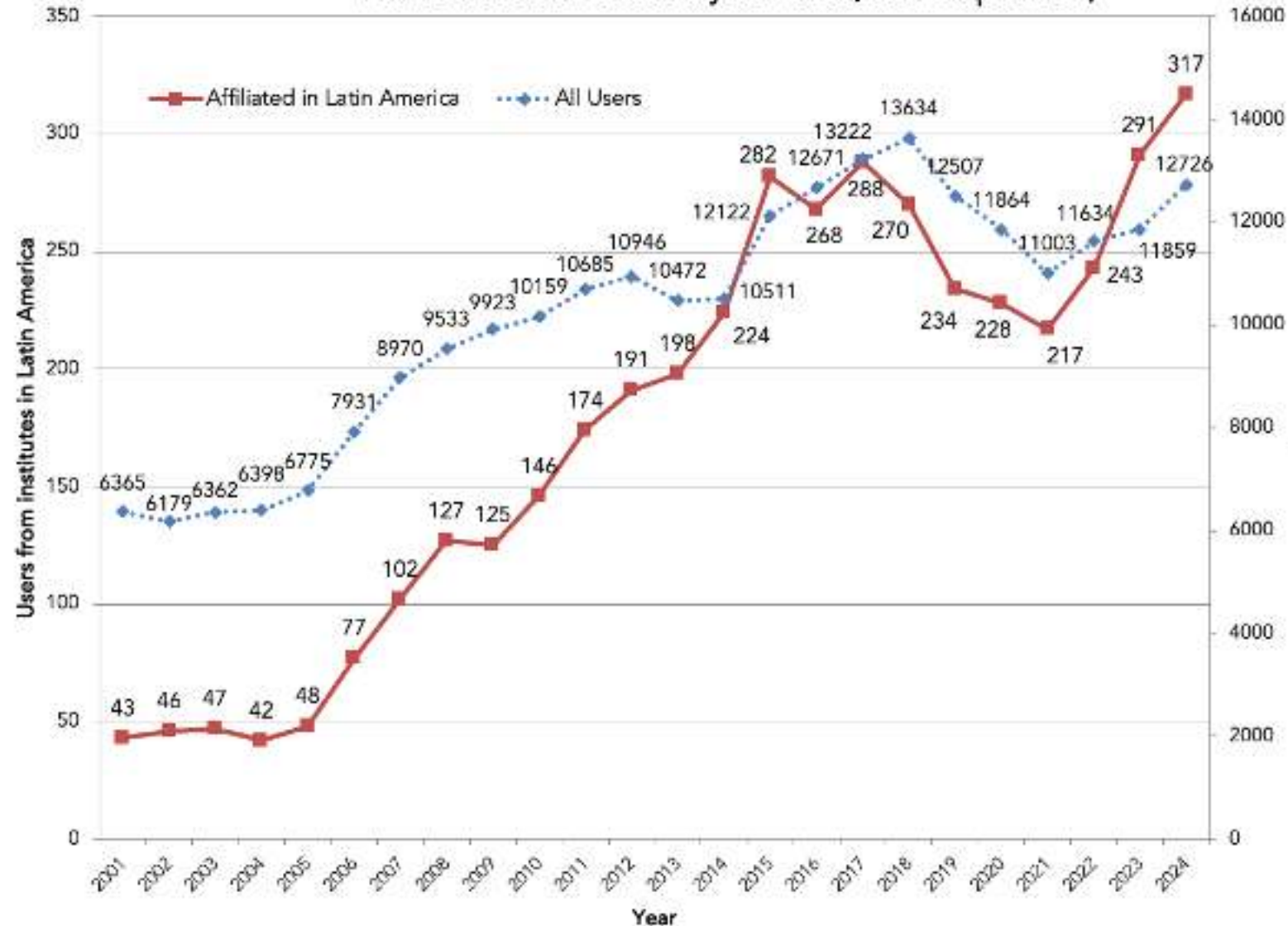
RESEARCH
PROGRAMME
PARTICIPATION

CERN Users (from Latin American institutes)

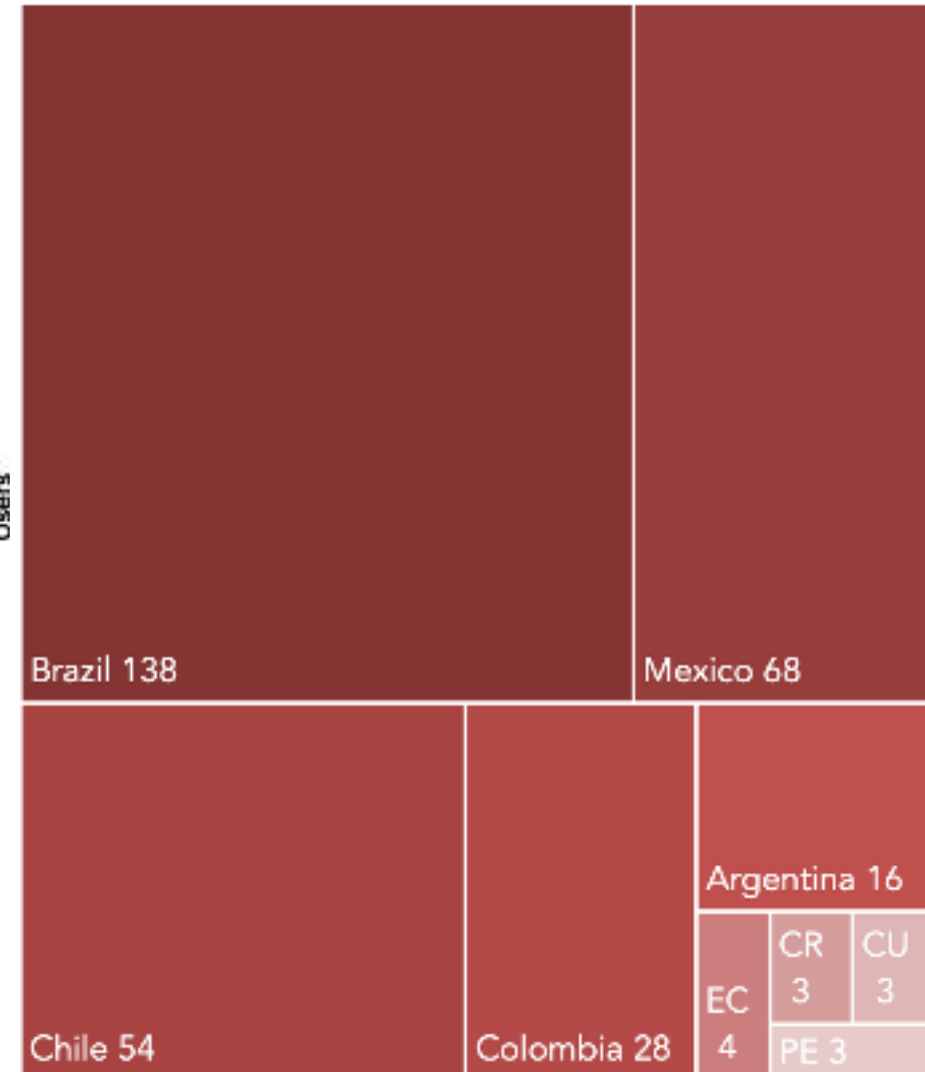
Students, Researchers & Technologists visiting for >5% of their working time over a 5-year window.

Local communities (Especially in Latin America) ~3-5 times larger: (under-)graduate students, engineers participating remotely/locally

Number of CERN Users at years' end (2024=September)

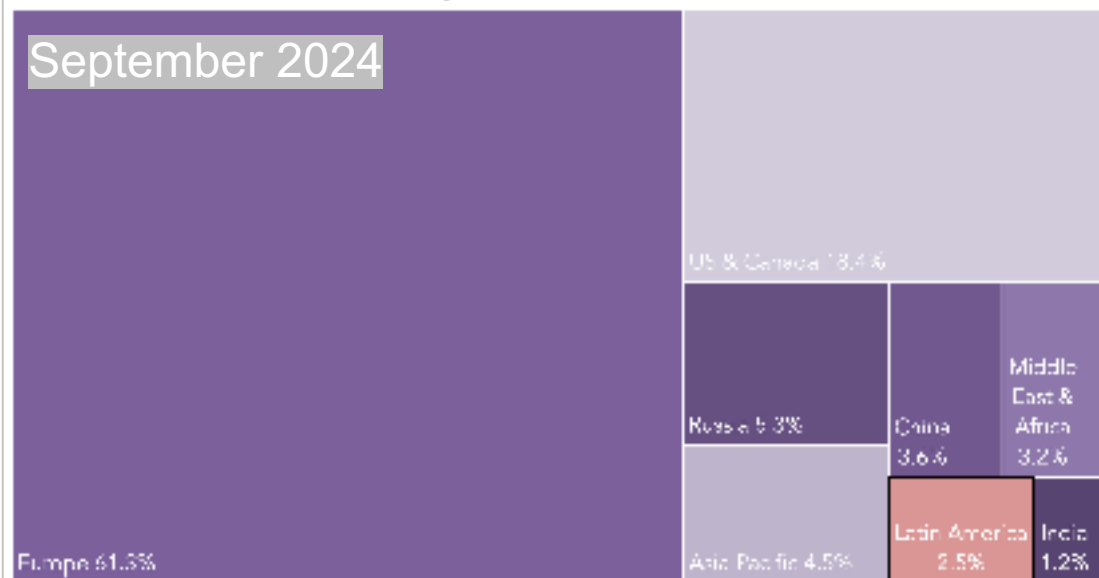


CERN Latin American Users by location of home institute

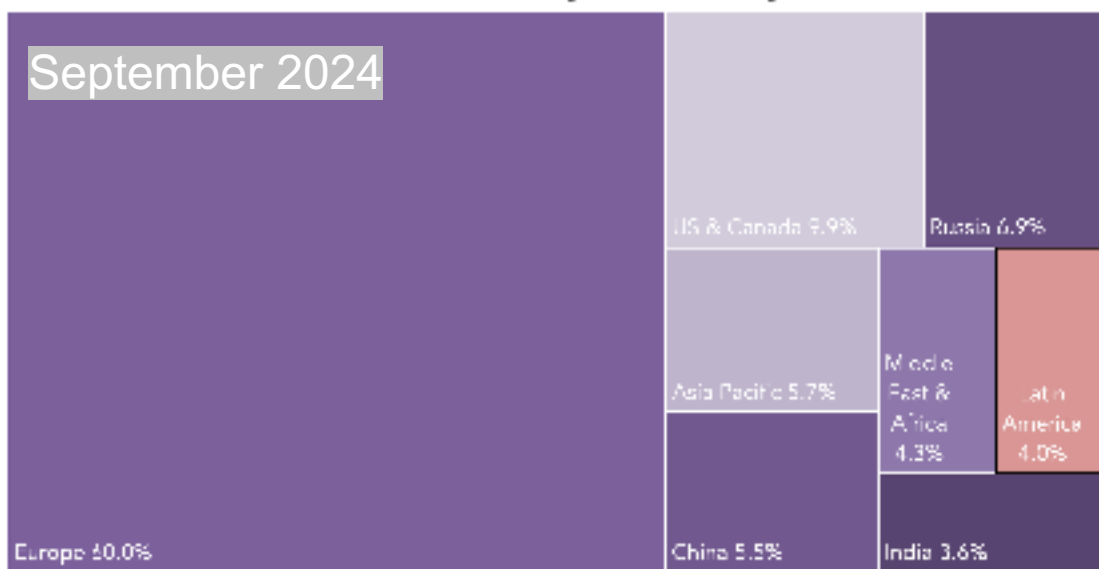


30% of 12'726 CERN Users are affiliated in a country other than their nationality.
47% of Latin American nationals are affiliated in a country other than their nationality
11% of Users in Latin American institutes are not Latin American nationals.

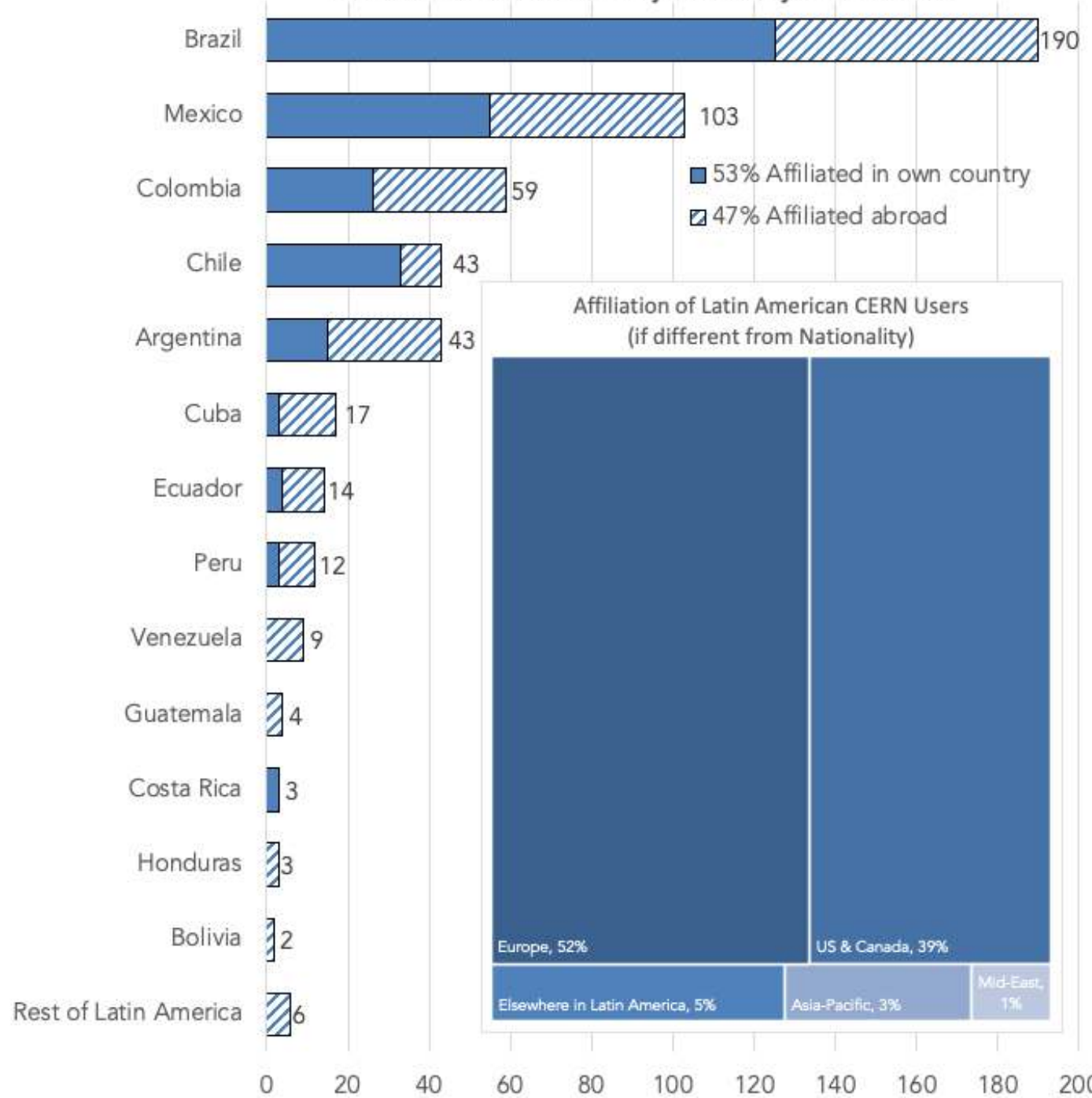
CERN Users by location of home institute



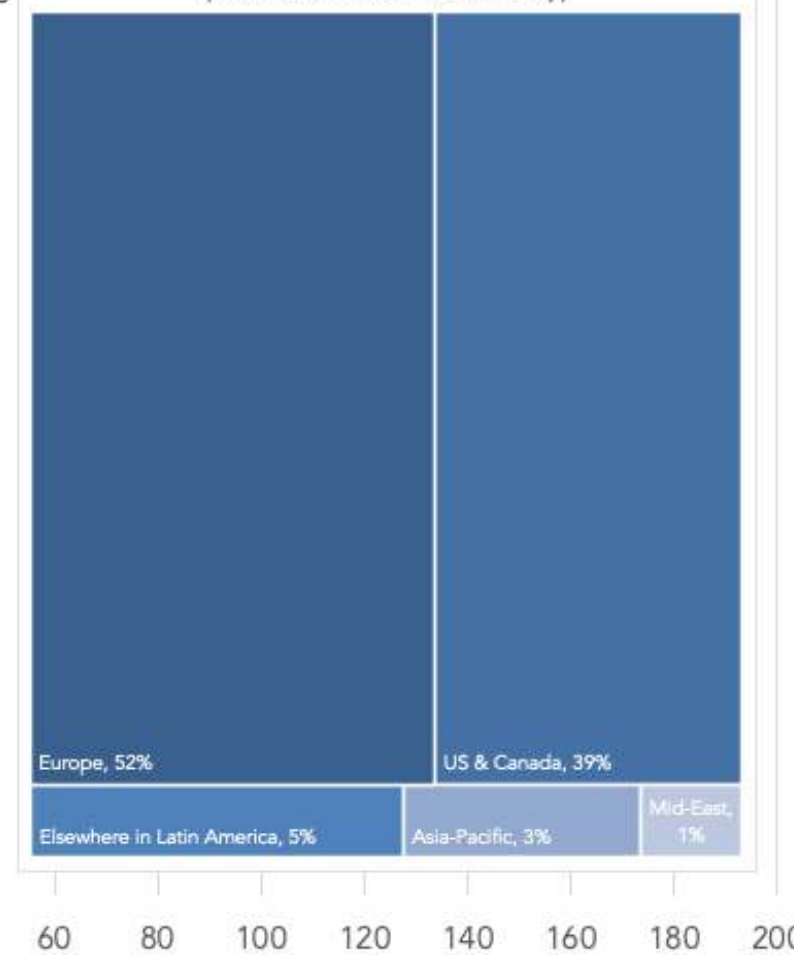
CERN Users by Nationality



Latin American CERN Users by Nationality and Affiliation



Affiliation of Latin American CERN Users (if different from Nationality)





CAPACITY BUILDING



CERN Non-Member State Summer Student Programme (running for >30 years)
8 weeks residential program for STEM undergraduates: lecture and sci/tech project
~1500 applications/year, ~130 internships/year, ~40% females
Externally funded (institutional/charity donors, specific partnerships): 7kCHF/student

Co-operation agreements and arrangements: Capacity building in the CERN Summer Student programme



Centro
Latino Americano
de Física



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MILLENNIUM INSTITUTE
FOR SUBATOMIC PHYSICS
AT HIGH-ENERGY FRONTIER
SAPHIR



RENAFAE

"A PhD packed
in two weeks"
Every other year,
since 2001
~80 students
2/3 from Latin
America

Proud to count
the region's
leaders in the
field among the
alumni



CERN LATIN-AMERICAN SCHOOL OF HIGH ENERGY PHYSICS

A close-up photograph of several flags on wooden poles. In the foreground, a blue flag with the white CERN logo is prominent on the left, and the Brazilian national flag (green, yellow, and blue) is in the center. Other flags are visible in the background, slightly out of focus. A semi-transparent teal circle is overlaid on the right side of the image, containing white text.

Brazil's new initiatives as an Associate Member State

DIÁRIO OFICIAL DA UNIÃO

Publicado em: 13/03/2024 | Edição: 50 | Seção: 1 | Página: 7

Órgão: Ato do Poder Executivo

DECRETO Nº 11.943, DE 12 DE MARÇO DE 2024

Promulga o Acordo entre a República Federativa do Brasil e a Organização Europeia para a Pesquisa Nuclear - CERN com relação à Concessão do **Status** de Membro Associado da CERN, firmado em Genebra, em 3 de março de 2022.

O PRESIDENTE DA REPÚBLICA, no uso da atribuição que lhe confere o art. 84, **caput**, inciso IV, da Constituição, e

Considerando que o Acordo entre a República Federativa do Brasil e a Organização Europeia para a Pesquisa Nuclear - CERN com relação à Concessão do **Status** de Membro Associado da CERN foi firmado em Genebra, em 3 de março de 2022;

Considerando que o Congresso Nacional aprovou o Acordo por meio do Decreto Legislativo nº 140, de 29 de novembro de 2023; e

Considerando que o Acordo entrou em vigor para a República Federativa do Brasil, no plano jurídico externo, em 26 de janeiro de 2024, nos termos de seu Artigo IV.1;

DECRETA:

Art. 1º Fica promulgado o Acordo entre a República Federativa do Brasil e a Organização Europeia para a Pesquisa Nuclear - CERN com relação à Concessão do **Status** de Membro Associado da CERN, firmado em Genebra, em 3 de março de 2022, anexo a este Decreto.

Art. 2º São sujeitos à aprovação do Congresso Nacional atos que possam resultar em revisão do Acordo e ajustes complementares que acarretem encargos ou compromissos gravosos ao patrimônio nacional, nos termos do inciso I do **caput** do art. 49 da Constituição.

Art. 3º A realização das despesas decorrentes do disposto neste Decreto fica condicionada ao cumprimento do disposto no § 5º do art. 17 da Lei Complementar nº 101, de 4 de maio de 2000, e do inciso XV do **caput** do art. 12 da Lei nº 14.791, de 29 de dezembro de 2023.

Art. 4º Este Decreto entra em vigor na data de sua publicação.

Brasília, 12 de março de 2024; 203º da Independência e 136º da República.

LUIZ INÁCIO LULA DA SILVA

Mauro Luiz Lecker Vieira

Brazil becomes Associate Member State of CERN

Brazil has become the first Associate Member State of CERN in the Americas

22 MARCH, 2024



As Brazil becomes Associate Member State of CERN, the Brazilian flag is photographed along with the CERN flag (image: CERN)

Brazil has become the first Associate Member State of CERN in the Americas, following official notification that the country has completed its internal approval procedures in respect of the [agreement](#) signed in March 2022 granting it that status and of the Protocol on Privileges and Immunities of the Organization. The starting date of Brazil's status as an Associate Member State is 13 March 2024.



Brazil's path as CERN Associate Member State



Discussions started in 2009, formal application in 2012, process paused in 2013, restarted in 2019.

CERN Council approved Brazil's association in September 2021, Agreement signed in March 2022.

Agreement ratified by Congress in November 2023, promulgated by Presidency in March 2024.

Association started March 13th 2024.

Brazilian nationals eligible for CERN staff, graduate, student positions; Brazilian companies can bid for contracts;

Brazil's yearly contribution to CERN Budget: ~10 MCHF (ceiling to personnel/procurement returns)

Co-operation agreements in support of research community



Following 1990 and 2006 umbrella agreements: CERN and CNPq (renewed) agreement to *“enable further participation by Brazilian scientific institutes and universities, as well as Brazilian researchers and students, in CERN’s research and training programmes”*



CERN and FAPESP agreement *“to enable further participation by SP scientific institutes and universities, as well as their researchers and students, in CERN’s research and training programmes and in any other area of mutual interest”*

CERN - CNPEM cooperation in accelerator technology



Formal Co-operation Started in December 2020. Currently a leading role to engage Brazilian industry

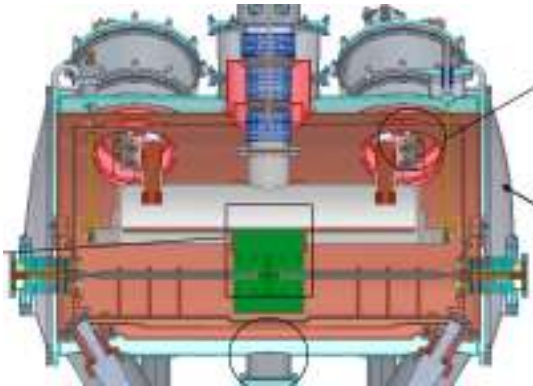


Joint design of components to upgrade SIRIUS' performance. Prototypes of superconducting magnets.

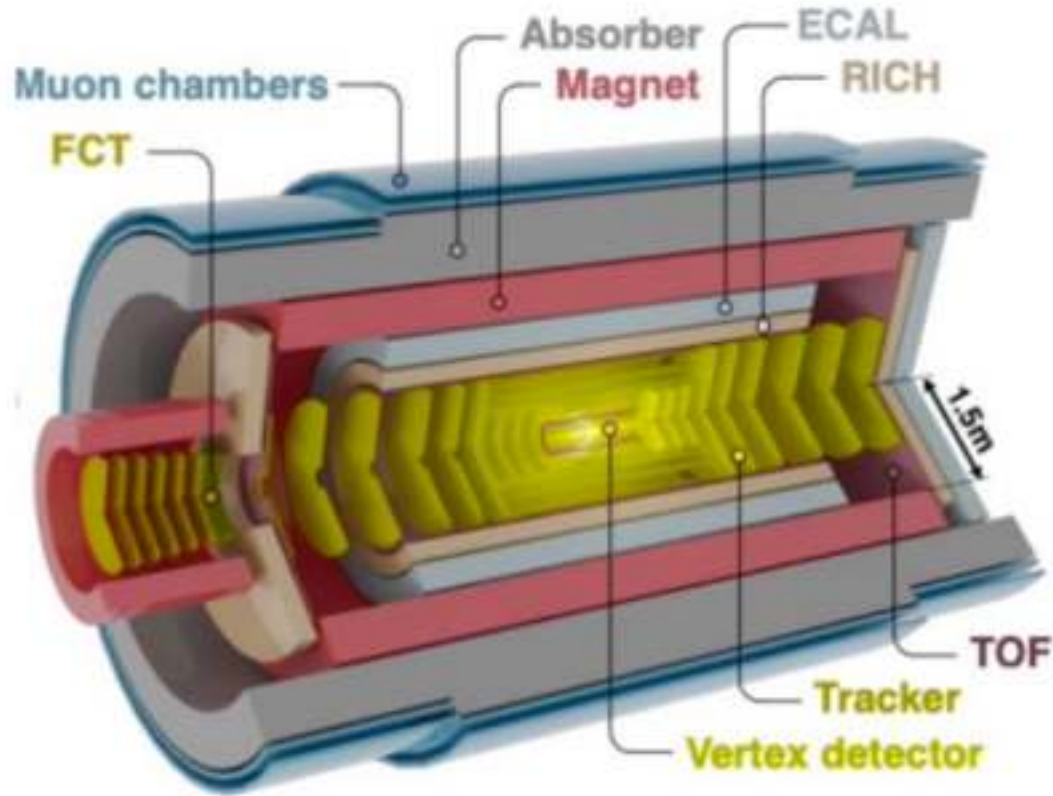


Medical accelerators: design for radioisotope production (CERN patent). Other proton applications.

Training of Brazilian physicists and engineers in Campinas and CERN (HL-LHC, FCC personnel)



ALICE superconducting magnet for HL-LHC upgrade CNPEM-led project with Brazilian industrial partners



Largest and most important piece of HEP infrastructure ever to be designed and (pending project approvals) built in Latin America

Some other Brazilian integration initiatives



Instituto Nacional de Pesquisas Espaciais
National Institute for Space Research

Participation in CERN's advanced distributed storage system operation and capacity building towards large-scale data federation for data sharing for research in environmental science



Under discussion: Secondment of researchers (and possibly technicians) at CERN to support specific technical challenges with Brazilian experimental teams at CERN



Future Circular Collider study

Exploring Concepts and Technologies for The Next Generation of
Powerful Particle Colliders



- **Momentum for Latin America at CERN**
Wider, larger, new communities
Enhance and widen capacity-/community-building
- **Strong growth of institutional engagement:**
Associate Membership, International Cooperation Agreements
Agency-level, institute-level agreements for wider activities
- **One-in-a-generation opportunities ahead:**
High-Luminosity LHC detector upgrades, physics programme
Technology, physics opportunity at the FCC