

LA-CoNGA physics

an open science education collaboration between
Latin America and Europe for High Energy
Physics

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on behalf of LA-CoNGA physics community



Latin American alliance for
Capacity building in Advanced physics

LA-CoNGA physics

Scientific collaboration and education at a global scale

Science and higher education
**globally distributed,
collaborative and
multidisciplinary**

University-research-society link
**knowledge generation,
application and transfer**

**Virtual Research and
Learning Networks**
play a key role

A network where **data, software tools,
research facilities, teaching and
information resources
are seamlessly shared**

Map of COVID 19 scientific collaboration indexed in the Scopus on the 7th of April 2020
Keywords : "COVID-19", "SARS-CoV-2", "2019-nCoV". 519 articles
Created with Netscity (<https://www.irit.fr/netscity/prod/>) by Marion Maisonobe (UMR Géographie-cités - CNRS). JS map by amCharts.

The importance of virtual research and learning networks

Internationalization

collaborative international environment

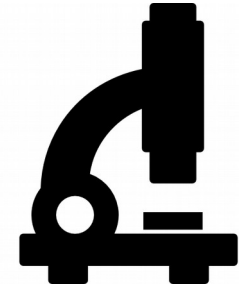
Accessibility



Each institution/group might not have all the resources/staff



Modernization



open educational resources, connectivity, acquisition of digital skills, and use/development of new learning methods

HECAP context in Latin America

High energy, cosmology and astroparticle physics community has grown in Latin America in the last decades



PIERRE
AUGER
OBSERVATORY



The European Particle
physics Latin America NETwork



High Energy Physics
Latinamerican European
Network



Latin American Giant
Observatory

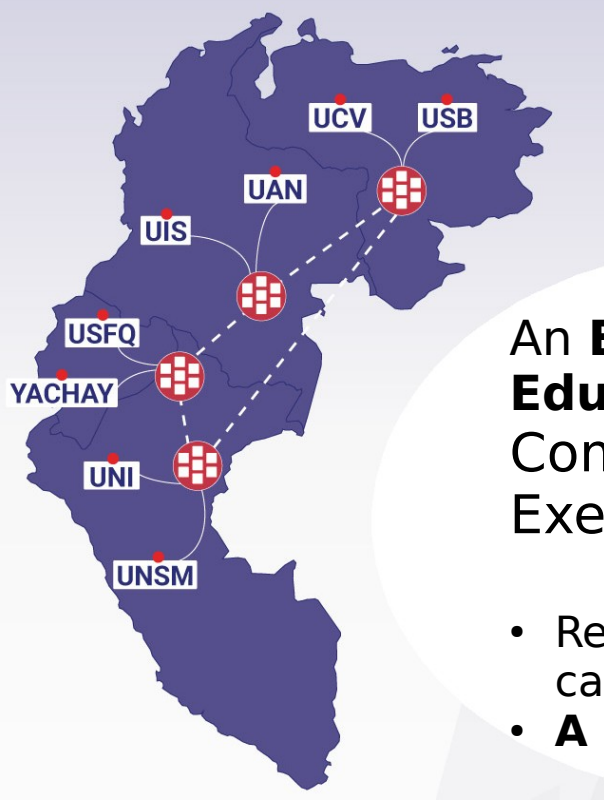


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The HECAP development is nuanced and variable country-by-country,
, but it has the huge potential thanks to:

- Diversity of interests and skills
- A young generation with potential and eagerness to learn
- Collaborative work make us stronger



LA-CoNGA physics

<https://laconga.redclara.net/>



Erasmus+

An **Erasmus+CBHE (Capacity Building in Higher Education)** project co-funded by the European Commission's Education, Audiovisual and Culture Executive Agency

- Responding to the strategy of the participant institutions and to the capacity building in higher education strategy promoted by the EU
- **A 3-years project. Officially started in January 2020**

11 universities from Latin America and Europe join efforts with other scientific (**CERN, CNRS, DESY, ICTP, IRFU**) and **industrial** partners to contribute to the modernisation, accessibility and **internationalisation of higher education in Colombia, Ecuador, Perú and Venezuela**

Universities

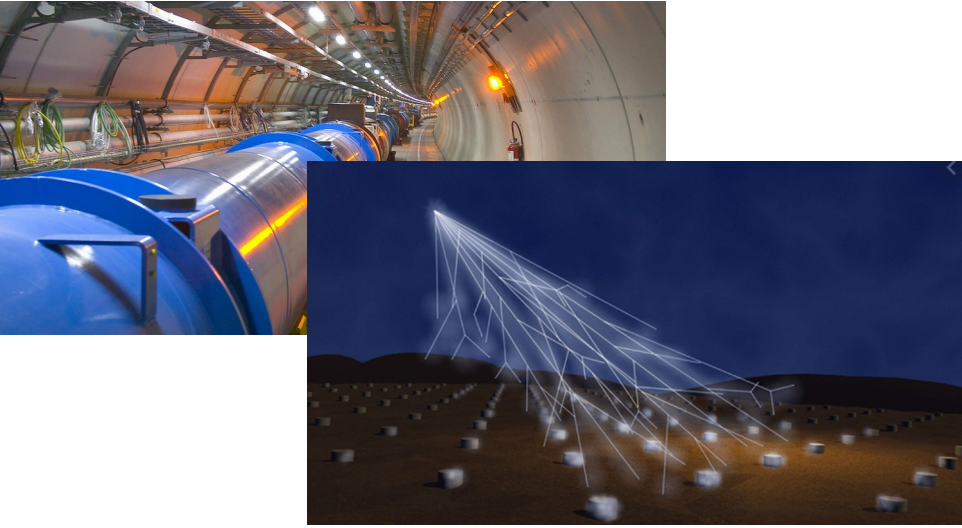


Scientific and Industrial partners



Thematic areas

High Energy Physics



Complex Systems



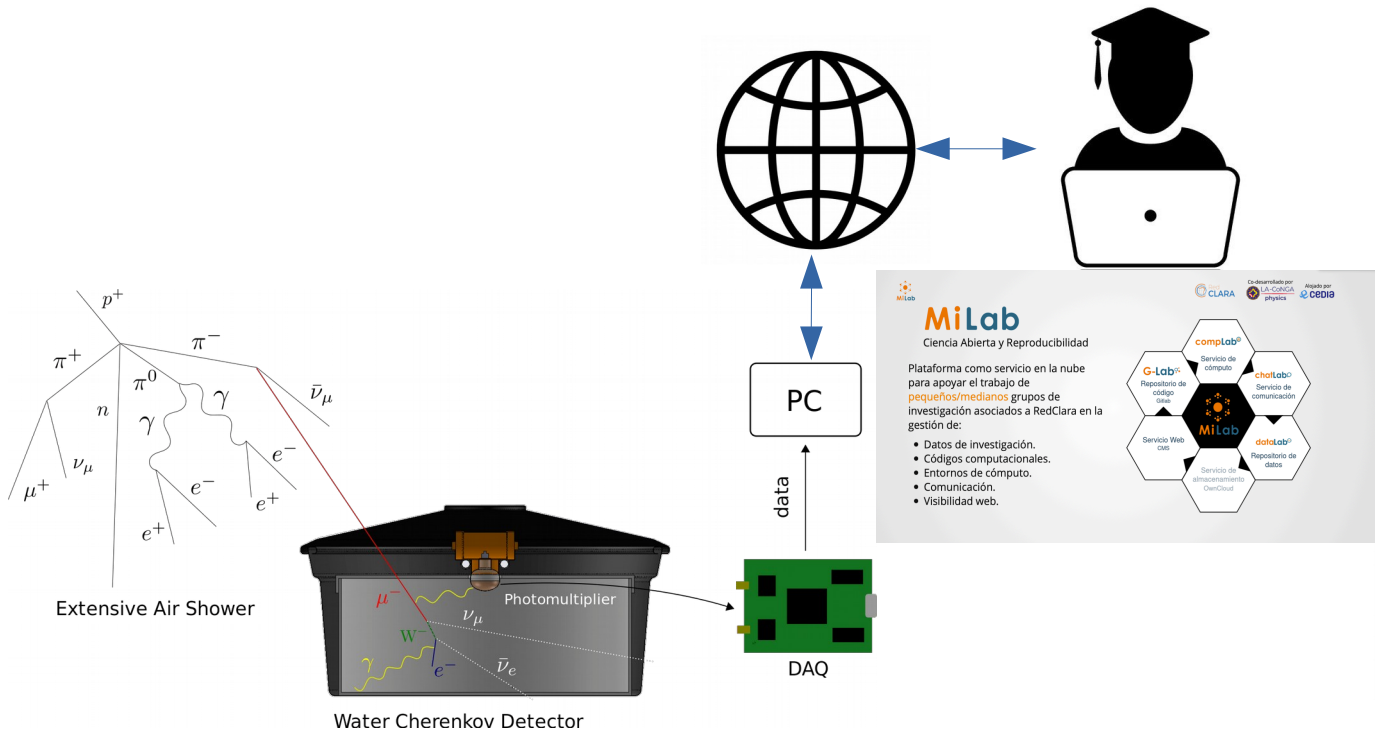
<https://laconga.redclara.net/courses/>

- Theoretical fundamentals and experimentation
- International collaborations
- Knowledge transfer

- Study of matter states
- Ubiquity of studied models
- Networks and collective behavior
- Highly interdisciplinary field

Methodology and platform

- An e-learning open-access platform
- Good practices of scientific reproducibility
- Remote-access experimental facilities



 **Mattermost**

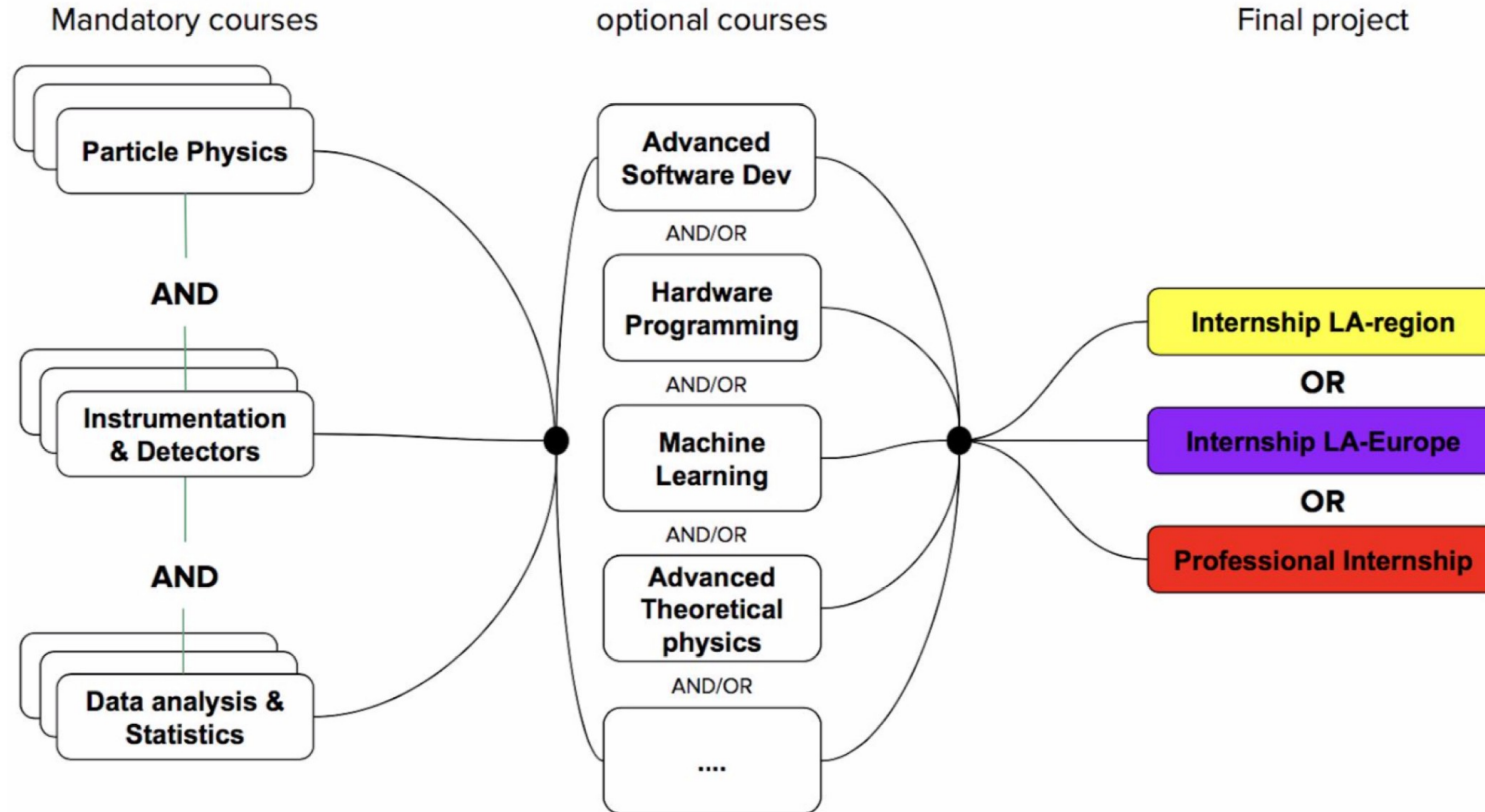
 **jupyter**



GitLab

Implementation

M1	M2	M3	M4 break	M5	M6	M7 break	M8	M9	M10	M11
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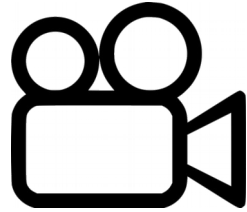


Remote labs

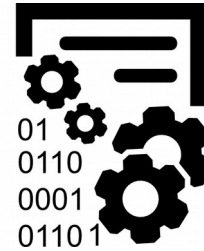
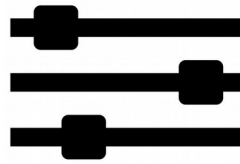
Biblio.



Demo



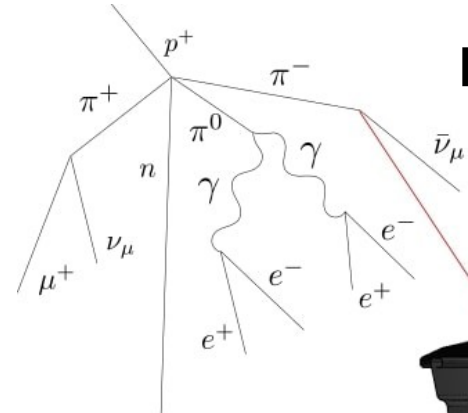
Control and data taking



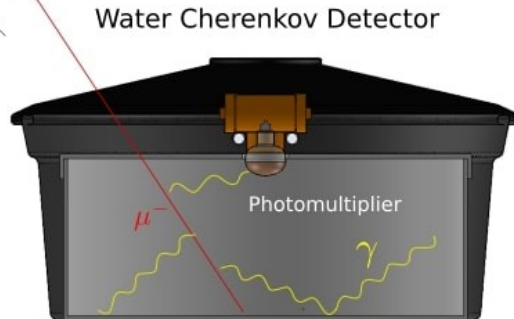
Communication



Remote detectors and instruments



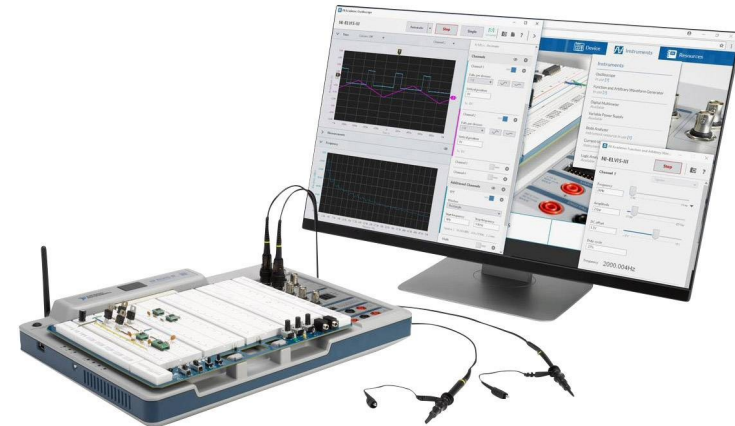
Extensive Air Shower



Water Cherenkov Detector



CAEN
Tools for Discovery



NATIONAL INSTRUMENTS

Seminars

- **Open-access** virtual seminars taking place twice a month
- Knowledge and expertise sharing from people working on **industry** and **academy**

<https://www.youtube.com/hashtag/seminarioslaconga>



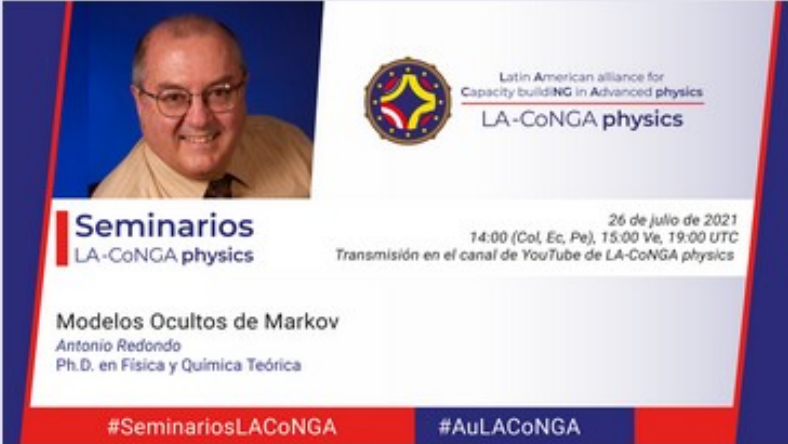
Seminarios
LA-CoNGA physics

14 de junio de 2021
14:00 (CoL, Ec, Pe), 15:00 Ve, 19:00 UTC
Transmisión en el canal de YouTube de LA-CoNGA physics

Ciencia ciudadana.
Una conversación en tres actos y a ocho manos
Jesús Peña-Rodríguez, Karen Forero-Gutiérrez, Jeniffer Grisales-Casadiegos y Luis A. Núñez
Universidad Industrial de Santander, Colombia

#SeminariosLACoNGA #AuLACoNGA

14/06/21 Seminario: Ciencia ciudadana, una conversación en tres actos y a ocho manos



Seminarios
LA-CoNGA physics

26 de julio de 2021
14:00 (CoL, Ec, Pe), 15:00 Ve, 19:00 UTC
Transmisión en el canal de YouTube de LA-CoNGA physics

Modelos Ocultos de Markov
Antonio Redondo
Ph.D. en Física y Química Teórica

#SeminariosLACoNGA #AuLACoNGA

26/07/21 Seminario: Modelos ocultos de Markov

How is it going on?

First Semester

Particle Physics

Instrumentation &
Detectors

Data Analysis &
Statistics

30 instructors

from Latin America and Europe

more than **50 students**
from 4 countries

more than **100 classes**

<https://laconga.redclara.net/terminamos-el-primer-semester/>

Second Semester

Statistical Mechanics

Astroparticles &
Cosmology

Reproducibility in
Science

Medical Physics



Our values and vision

- We strengthen a **sustainable, dynamic, collaborative, interconnected**, and **diverse** virtual research and learning network of Latin American and European researchers in advanced physics
- With close ties to the **productive sector**, which leads the development of science and technology in the region
- Contributing to the modernization, accessibility and internationalization of higher education systems in the region
- Using of technology in educational environments to enhance learning
- Applying **good scientific practices** and **gender equality**
- We envision similar experiences in other disciplines

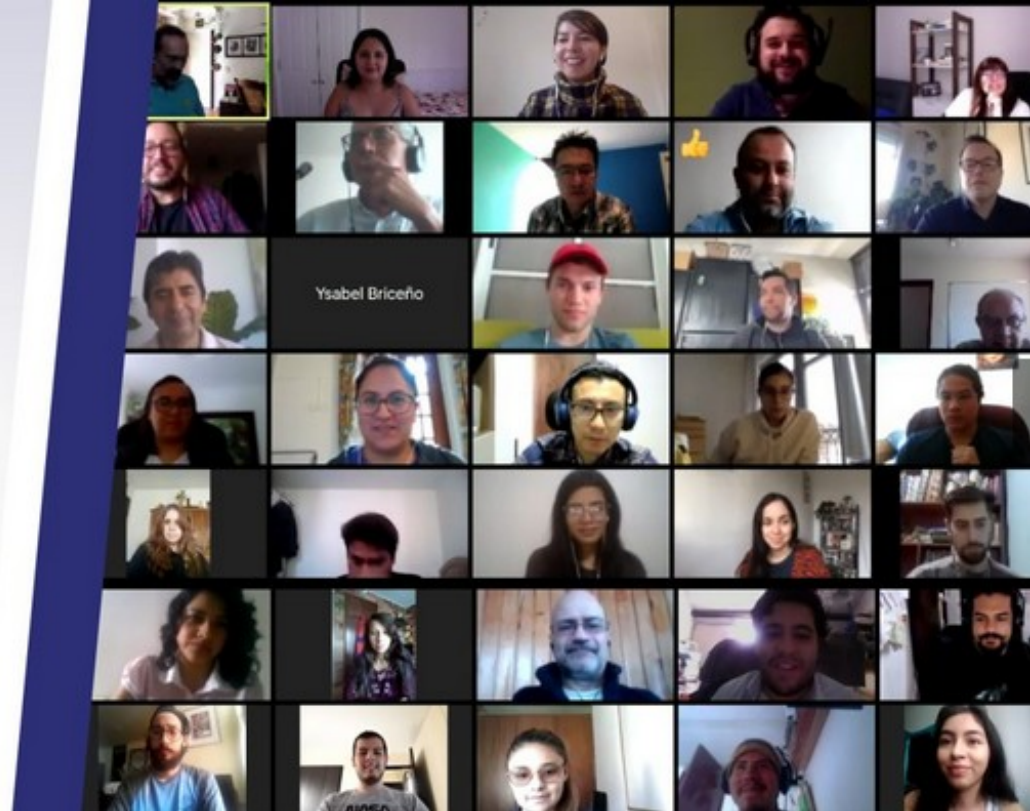
Thanks!



Latin American alliance for
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LA-CoNGA physics

- ✓ Colaboración internacional
- ✓ Comunidad interconectada
- ✓ Presencialidad remota
- ✓ Impacto social
- ✓ Conocimiento abierto





<http://laconga.redclara.net>



contacto@laconga.redclara.net



lacongaphysics



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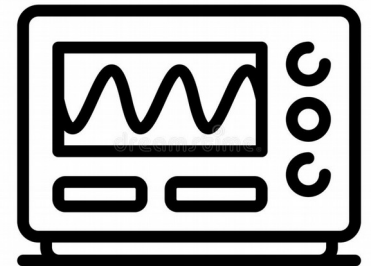
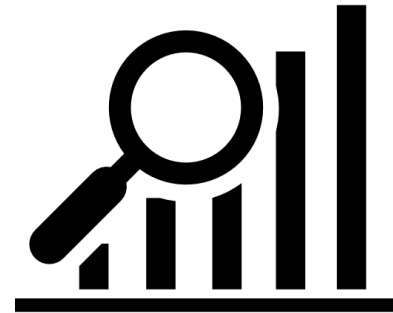
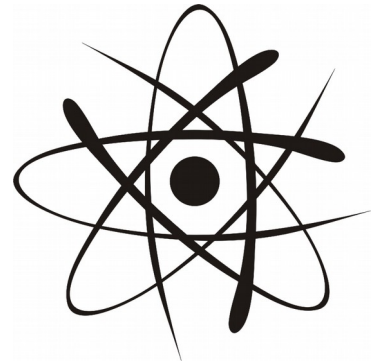
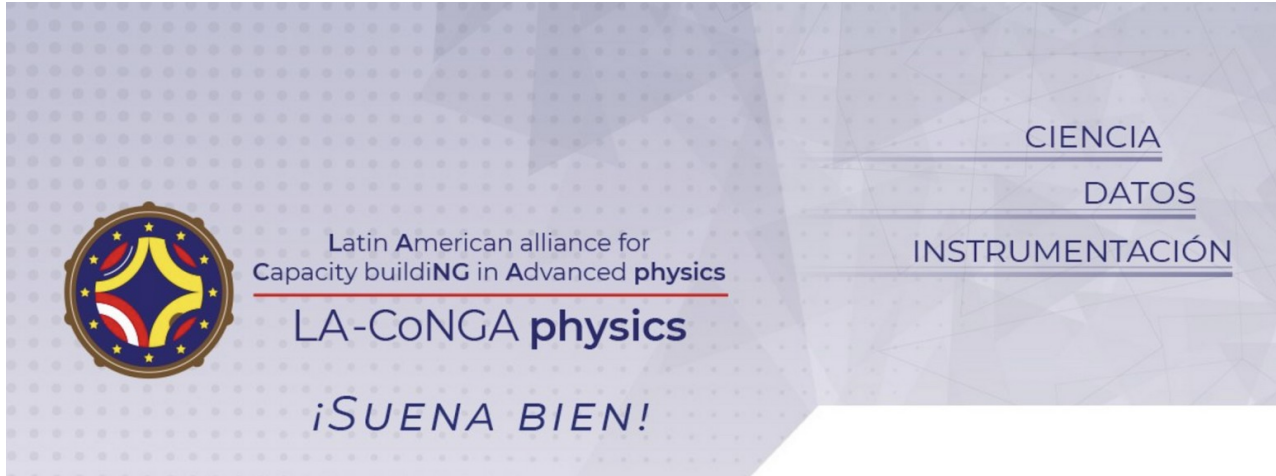
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Competences



Methodology and platform

- An e-learning open-access platform
- Remote-access experimental facilities
- Good practices of scientific reproducibility
- Mobility program in Latin America and Europe for internships

