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

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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**
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.

The HECAP development is nuanced and variable country-by-country, but it has 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/

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 participating institutions and 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
LA-CoNGA physics

A one-year specialization that fulfils the **Bologna Declaration**, with a **homologation** system of courses between the participant university academic programs.
Methodology and platform

- An e-learning open-access platform
- Good practices of scientific reproducibility
- Remote-access experimental facilities
- Spanish teaching material
Thematic areas

High Energy Physics

- Theoretical fundamentals and experimentation
- International collaborations
- Knowledge transfer

Complex Systems

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

https://laconga.redclara.net/courses/
Remote labs

Biblio.  Demo  Control and data taking  Communication

Remote detectors and instruments

Water Cherenkov Detector

Extensive Air Shower

CAEN

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

26/07/21 Seminario: Modelos ocultos de Markov

12/07/21 Seminario: Definición de complejidad para fluidos autogravitantes

28/06/21 Seminario: Cuando el tiempo dejó de importar. Un paseo por las formas modernas de cocinar
How is it going on?

First Semester

**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-semestre/

Particle Physics & Complex Systems

Instrumentation & Detectors

Data Analysis & Statistics

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!

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