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
Scientific collaboration and education at a global scale

Science and higher education globally distributed, collaborative and multidisciplinary

Virtual Research and Learning Networks play a key role

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

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
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**
Universities
Scientific and Industrial partners
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 (https://laconga.redclara.net/courses/)

**High Energy Physics**

- Theoretical fundamentals and experimentation
- Strong international collaborations
- High knowledge transfer

**Complex Systems**

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

Biblio.  Demo  Control and data taking  Communication

Remote detectors and instruments

Water Cherenkov Detector

Extensive Air Shower

CAEN

National Instruments

CAEN

National Instruments
Seminarios (https://www.youtube.com/hashtag/seminarioslaconga)

Seminario especial
LA-CoNGA physics
Steven Weinberg: El Modelo Estándar
Fernando Quevedo
Department of Applied Mathematics and Theoretical Physics (DAMTP)
University of Cambridge

La física en medicina
Blas J. Carpiose
Ph.D. UT Health Cancer Institute, EEUU

La tormenta desde arriba: detección por satélite de nubes de convección profunda y zonas de penetración de la tropopausa
Lorenzo Labrador
Oficial científico de la Organización Meteorológica Mundial
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**

Second Semester

- Statistical Mechanics
- Astroparticles & Cosmology
- Reproducibility in Science
- Medical Physics

https://laconga.redclara.net/terminamos-el-primer-semestre/
We wait for you! :)
Thanks

Missing some of the community members in the picture!
Invite you to check our launching video and our website (https://laconga.redclara.net/) to get more info about the project and the team!
El apoyo de la Comisión Europea para la producción de esta publicación no constituye una aprobación del contenido, el cual refleja únicamente las opiniones de los autores, y la Comisión no se hace responsable del uso que pueda hacerse de la información contenida en la misma.
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 modernisation, accessibility and internationalisation 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.