LA-CoNGA physics

April 18th , 2023

External Advisory Meeting

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Latin American alliance for Capacity buildiNG in Advanced physics
LA-CoNGA physics

Cofinanciado por el programa Erasmus+ de la Unión Europea

Overview

- 1-year extension requested approved!
  - Same total budget but restructured as discussed in our last meeting
  - Project officially running until January 2024
- Años universitarios 2022 y 2023
  - Activities, network schools and plans
- Miscellaneous: Documenting the effort
- Final report: Preparation, timelines and audit
- Más allá del 2024 :Brainstorming on sustainability

LA-CoNGA physics : *a Latin American Alliance*

- LA-CoNGA physics is an Erasmus+ project, CBHE category (Capacity Building in Higher Education)
    - coordinated by Université Paris Cité
    - total budget : 900 k€, 2020-2023

- Main objectives :
    - ***build a network of common capacities*** in advanced training for 8 Universities in 4 Andean countries: Colombia, Ecuador, Perú, Venezuela
    - strengthen collaboration between ***Latin America*** and ***Europe*** in Higher Education

- Proof-of-concept : setup a ***Master-level*** complete year in ***Advanced Physics***

    - ***common, cross-institutionnal*** program
        - ***inserted*** in the already-existing ***local Master*** programs
    - modern, ***interconnected*** instrumentation laboratories
    - ***innovative e-learning platform***, fully based on open-access contents and tools
    - problem-solving pedagogical approach, structured in mini-modules
    - ***3-month internships*** in research labs or industrial partners (in Europe or LA)
    - Syllabuses calibrated on the EU ***Bologna process*** (i.e. 60 ECTS = 1 complete year)

LA-CoNGA physics : *the consortium*

Program Partners in Europe:

- Université Paris Cité (UPC), France (Coordinator)
- Université Paul Sabatier Toulouse, France (UPS)
- Technische Universität Dresden (TUD), Germany

Program Partners in Latin America:

- Colombia : UIS (Bucaramanga), UAN (Bogotá)
- Ecuador : Yachay Tech (Ibarra), USFQ (Quito)
- Peru : UNI, UNMSM (Lima)
- Venezuela : UCV, USB (Caracas)

Associated Partners:

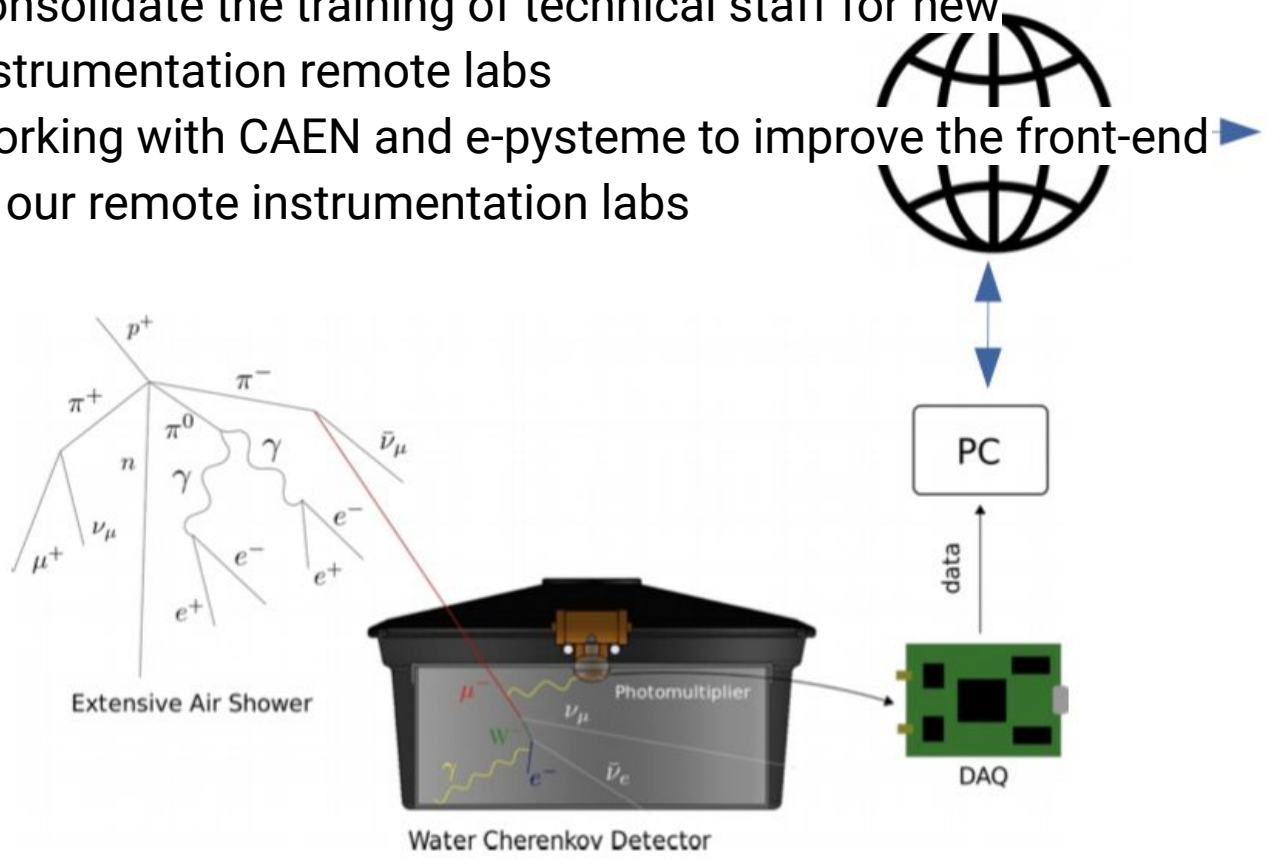
- International research centers: CERN and ICTP
- National research centers: CNRS (FR), CEA (FR) DESY (GE)
- Industrial partners in Latin America and Europe
- Other academic partners in the Americas

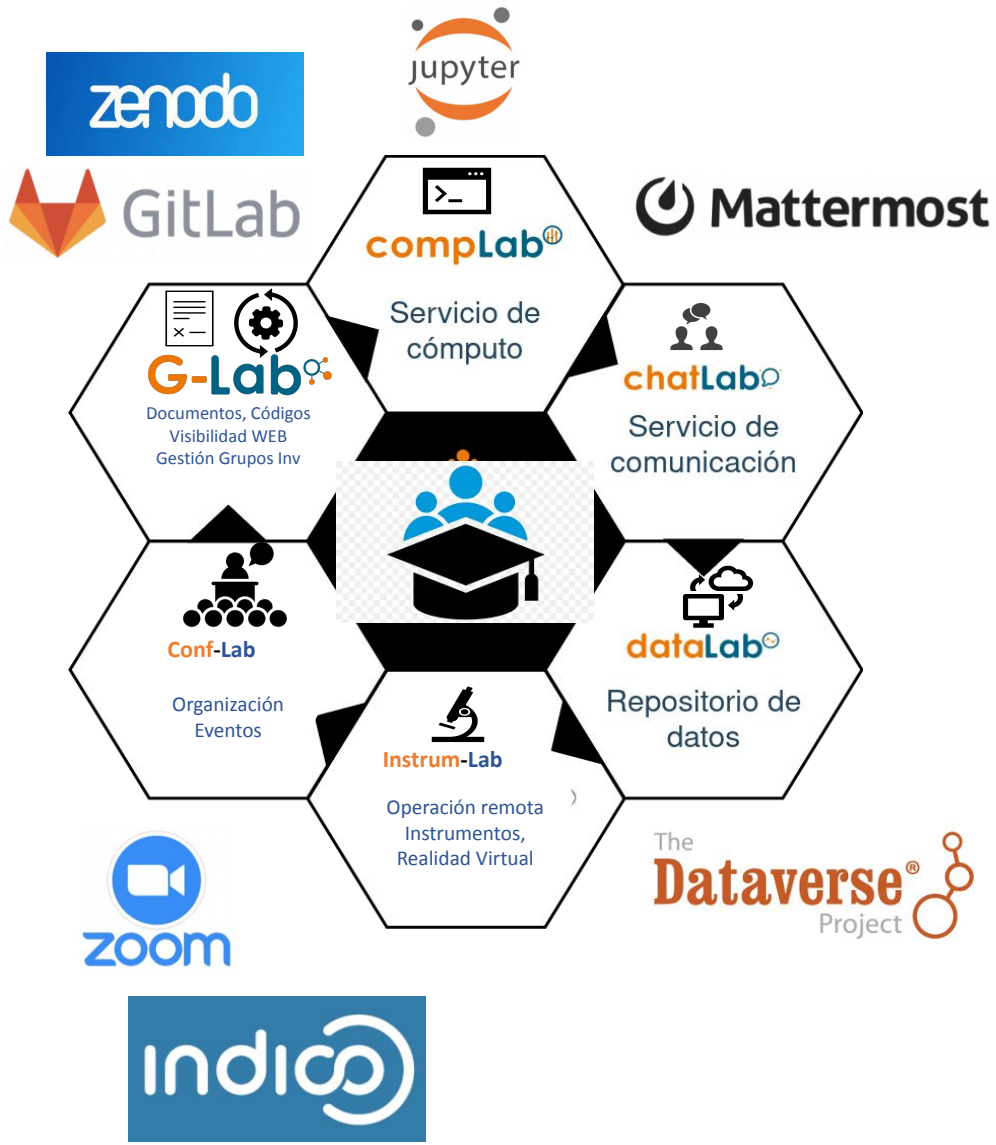
LA-CoNGA physics : *the syllabuses*

- **Key subjects of study**, skills highly in demand inside and outside academia:
  - **Data Science**
  - **Instrumentation**
  - **Theory**, two streams: High Energy Physics and Complex Systems
- All three with the same number of ECTS/credits

LA-CoNGA physics : *methodology and tools (1/2)*

- An e-learning open-access platform
- Remote access interconnected instrumentation labs
  - A big part of the effort in 2022 and 2023 focused on consolidating this network of labs
  - All equipments are now operational. All universities in the consortium participated in 2023 in hands-on practices with our student
  - Consolidate the training of technical staff for new instrumentation remote labs
  - Working with CAEN and e-pysteme to improve the front-end of our remote instrumentation labs

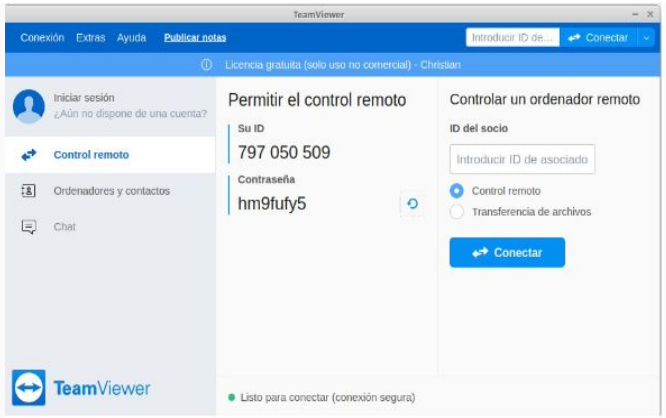




LA-CoNGA physics : *methodology and tools (2/2)*

DIGITALIZADORA

Posee 2 canales ADC de 12 bits y 250 MS/s. Además, incluye un firmware integrador de carga dedicado al procesamiento de pulsos en tiempo real.



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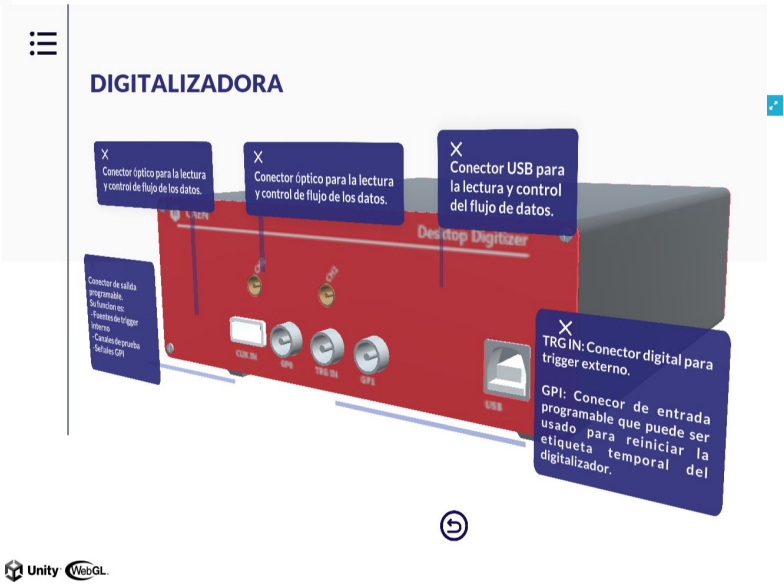


Unity WebGL

Unity WebGL

Laconga Virtual

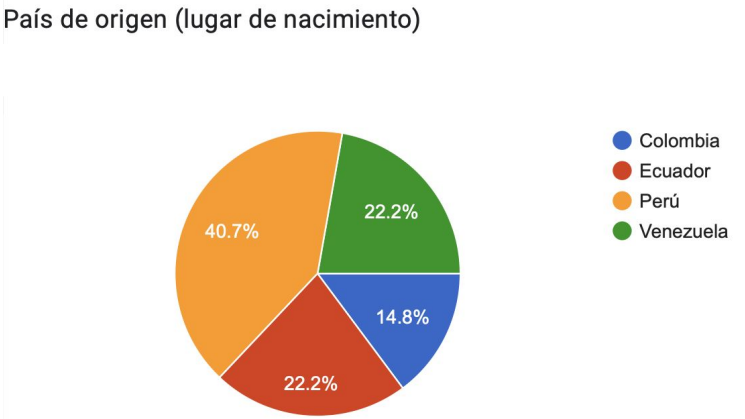
https://grupohalley.gitlab.io/labs/

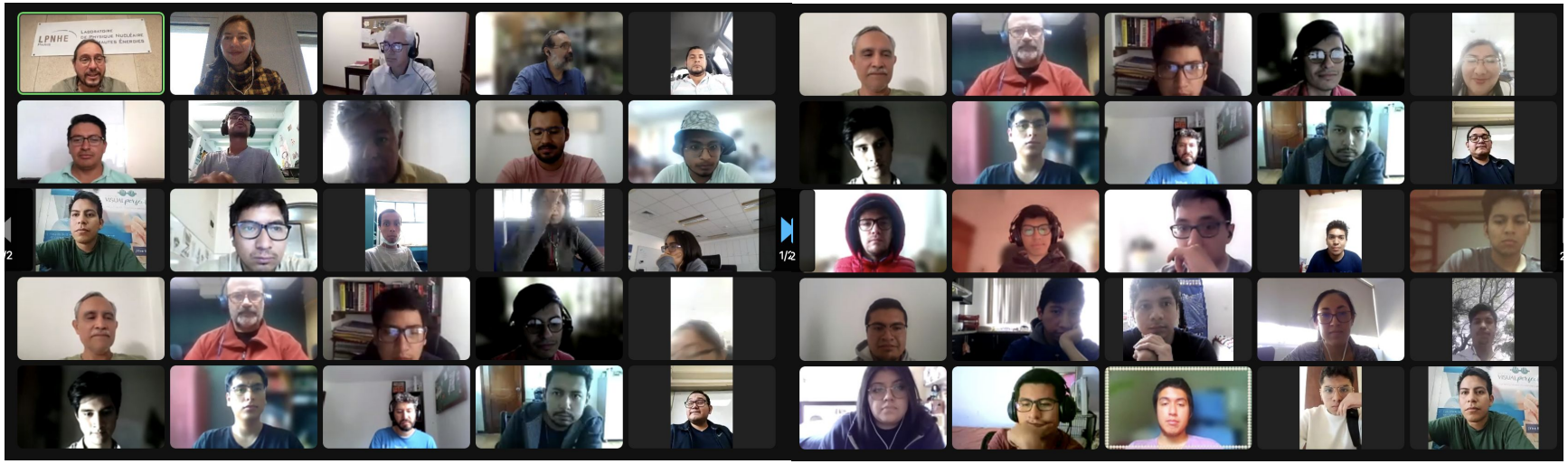
LA-CoNGA physics *in 2022*

- **30 instructors** from Latin America and Europe
- More than **30 students** from 4 countries completed at least one full course
- 11 internships between Sept and Dec 2022. In-person international mobility for all students, and for the first time!
- First on-site laboratory practices (6 out of 8 universities)!
- The 2022 cohort met in December 2022 in Santa Marta for the [second LA-CoNGA physics Network School]

LA-CoNGA physics *in 2023 (1/2)*

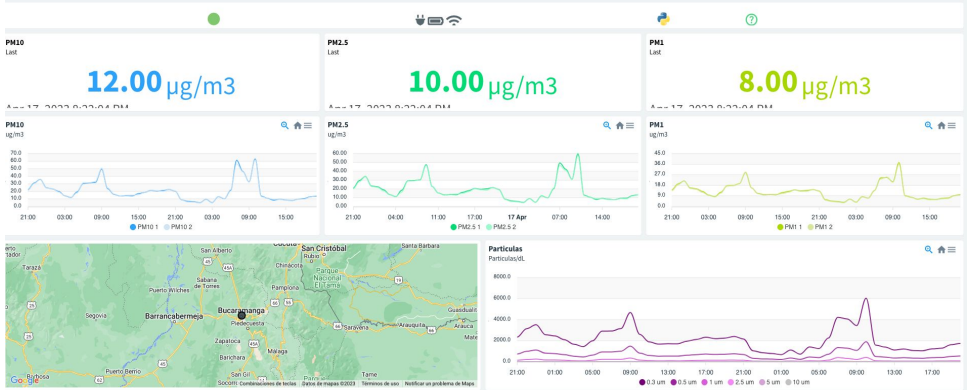
- We welcomed our third cohort in January!
  - 70 students registered for at least one of the courses in the program offered
- Laboratories fully operational in all universities in the consortium
- Back to pre-COVID reality. Many of our students following course asynchronous (week-ends, evenings) due to work responsibilities
  - A very different experience wrt 2021 and 2022
  - Re-adapting strategies to offer more support





LA-CoNGA physics *in 2023 (2/2)*

- Two main transversal activities being prepared for 2023:
  - Citizen science projects
    - Deployment of air-quality sensors in high schools
    - First meeting with schools took place earlier this year
    - Next steps: Training of teachers and involvement of LA-CoNGA students on-site
  - The 2023 LA-CoNGA physics Network School planned for December 2023 in Paris



LA-CoNGA physics : ***documenting the experience***

- Planning to document the experience with two papers in 2023
- One describing the initiative and results, the teams participating
- A second one focused on the remote access interconnected instrumentation labs
- Targeting: IOP Science Physics Education or European Journal of Physics
- Effort just starting. Feedback welcome!

ERASMUS+ Latin American Latin American Alliance for Capacity buildiNG in Advanced Physics (LA-CoNGA Physics): 3 years of experience

Author goes here
Address goes here
E-mail: `e-mail goes here`

Abstract. Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

1. Introduction
Background, objectives, mission and vision Describe the consortium here?

2. LA-CoNGA physics: rationale and program
3. LA-CoNGA physics: curriculum
4. Beyond the classroom and zoom rooms
Transversal activities: seminars, hackathons, network school

5. Learning outcomes and results
Some pie charts and stats...

6. Challenges, outlook and sustainability
7. Conclusion
Acknowledgments
Insert acknowledgements here

LA-CoNGA physics : *closing the first phase*

- Project officially ending in January 15th, 2024
- Final report to the European Commision due by April 15th 2024 at the latest
  - Based on our experience with the mid-term report, it will require at least 3 months of work to prepare this document
  - We would require from you a short report that we can use as annex. Format to be discussed
- Preparing a survey for LA-CoNGA physics alumni as well that can serve as inputs for the report and the papers in preparation
- Audit is also a part of the end of the project preparation
  - Working with EUROP'AID, an external auditor team based in Montpellier
  - Two phases:
    - A first one ongoing and covering from the beginning of the project until August 2022
    - And the final one taking place at the beginning of 2024

LA-CoNGA physics : *beyond 2024*

- We have discussed in the past some of our ongoing discussions about funding organization and also our effort to create inter-institutional agreements
- Concrete efforts:
  - Applied to the IDB regional goods call (unsuccessfully)
  - Erasmus+ international mobility funds with a subset of universities in the consortium (due to the call constraints).
    - Could help covering mobility for staffs and students
    - Still waiting for an answer, response expected by mid-2023.
- Other possibilities we could explore:
  - ICTP Network program
  - Try again an Erasmus+ for the 2024 call
    - Non negligible effort, afaik the proposal needs to show growth and sustainability wrt the previous version implemented
  - Ideas and feedback are very welcome!

http://laconga.redclara.net

contacto@laconga.redclara.net

Mucha más información en nuestra web y nuestras redes sociales

lacongaphysics

Latin American alliance for
Capacity buildiNG in Advanced physics

LA-CoNGA physics

Cofinanciado por el
programa Erasmus+
de la Unión Europea

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LA-CoNGA physics : *tools and instruments*

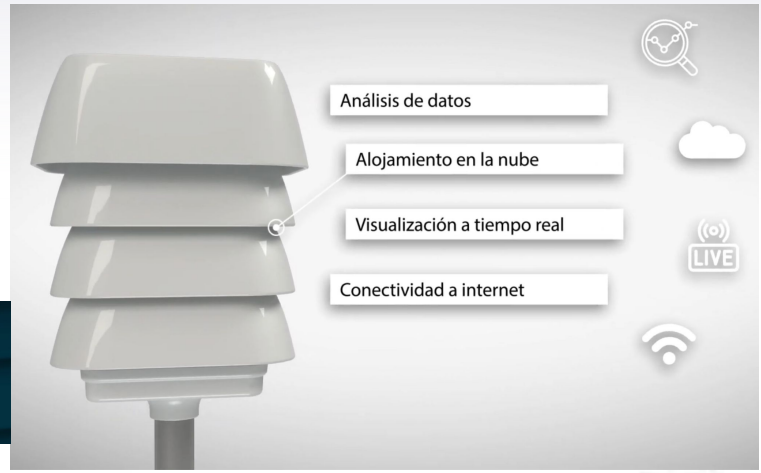
Université Paris Cité

- Advanced teaching lab in ***Nuclear Physics*** :
  - **CAEN** Premium Kit and **CAEN** EasyPET
    - scintillators, SiPMs, spectrometers…

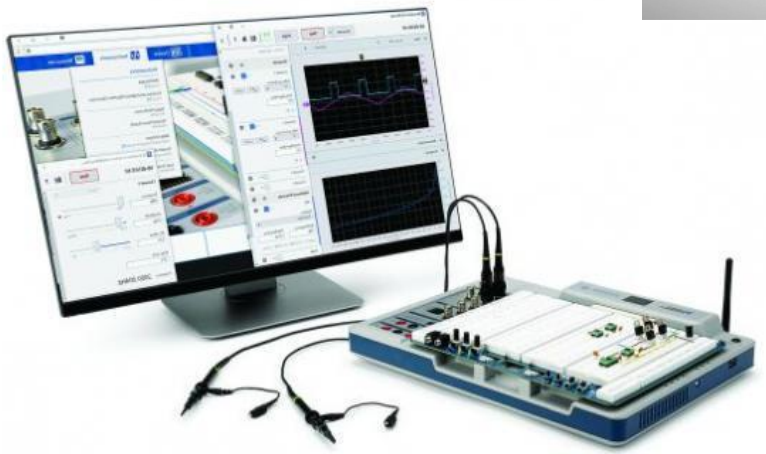
Material deployed in all 8 Latin American partner Universities

- Laboratory toolkits***: Multi-purpose***, ***interconectable*** and ***remote-accessible***
  - **National Instruments** Virtual Instrumentation Suite ELVIS III
  - **Keysight** EDU Series for Ecuador
    - oscilloscopes, function generators, protoboards…

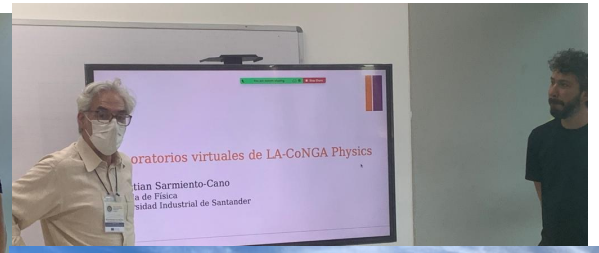
- Air-quality monitoring stations for **high-school science labs**
  - **Made in Colombia** by **MakeSens** startup



- Computing stations (**DELL** Optiplex)



Estudiantes y cursos (2022)

Curso	Número de estudiantes aprobados
1Sem-Teoría de Campos	12
1Sem-Ingeniería de Soft y Estadística	12
1Sem-Instrumentación Científica	15
2Sem-Física Médica	6
2Sem-Mecánica Estadística Avanzada	2
2Sem-Astropartículas y Cosmología	3
2Sem-Tópicos Avanzados en Datos	13

País receptor	Número de pasantes 11
Colombia	5Ve + 1Pe + 1Rw = 7
Ecuador	2Co
Venezuela	1Ve
Francia	1Ve