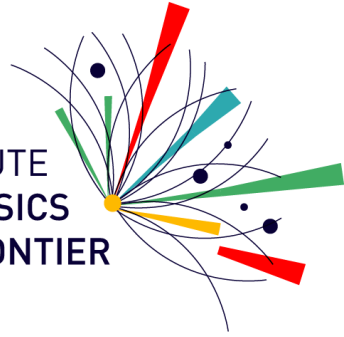




CTEPP
CENTER FOR THEORETICAL
AND EXPERIMENTAL
PARTICLE PHYSICS

MILLENNIUM INSTITUTE
FOR SUBATOMIC PHYSICS
AT HIGH-ENERGY FRONTIER
SAPHIR



Experimental particle physics at Andres Bello University (UNAB) Chile

Jilberto Zamora Saá
Associate Professor at UNAB
&
Associate researcher at SAPHIR

Particle physics at UNAB

- 2018 : The group is created (only one element J.Z-S → Trivial group).
- 2019: Sergey Kuleshov, Sergey Kovalenko and Pablo Ulloa join the group, we left to be a trivial group.
- 2019: We join CERN and start to participate in the ATLAS experiment.

I. Changes in Composition of the Chilean Cluster



Present Institutes in the Chilean cluster:

- *Pontificia Universidad Catolica de Chile* (PUC, Santiago)
- *Universidad Tecnica Federico Santa Maria* (UTSFM, Valparaiso)

We have received an Expression of Interest by the **Universidad Andrés Bello (UNAB)** (Santiago de Chile) to join the Chilean ATLAS Cluster as a third institute

Institute Leader: **Sergey Kuleshov** (Full Professor)
(so far ATLAS member at UTSFM)



Deputy: Jilberto Zamora-Saa (Assistant Professor)

Additional group members: Pablo Ulloa (Assistant Professor)
Renato Galleguillos (Prof. Applied Physics, Instrumentation)
Sergey Kovalenko (Prof.)

Two postdocs (S. Olivares (so far PUC), NN) + one more in

2020

PhD programme in Physical Sciences (ATLAS: ~ 5 PhD

students)

+ Undergraduate students (two at present)

We had a dream

- Plan to open up (2020) a **Centre for Theoretical and Experimental Particle Physics CTEPP** at Universidad Andrés Bello

(5 faculty members, 5 postdocs, 5 PhD students, 10 undergrads, 3 engineers and 2 technicians; comprising: HEP research group, Computer Center, Detector Lab, Mechanical workshop, micro-electronics laboratory)

- **Planned contributions to ATLAS**

New Small Wheel: - S. Kuleshov will continue his participation in the sTGC production, in collaboration with UTSFM;
- S. Kuleshov et al. will collaborate with PUC on the sTGC assembly
- Participation in NSW assembly at CERN
- PUC, UTSFM, UNAB: installation / maintenance of NSW / muon system

Phase-II Upgrade: - Test and design of TGC Charge Monitoring Boards
(Common Chilean Cluster contribution to Phase-II muon upgrade)

Physics: - Exotics Physics (W decays via heavy neutral leptons and Higgs bosons)

- The proposal has the support of the Chilean ATLAS community (NCP, letter) and of the Chilean Funding Agency CONICYT (supporting letter received)
- The Spokesperson and the CB Chair support this strong proposal as well
- The CB is asked to take note

Where we are?

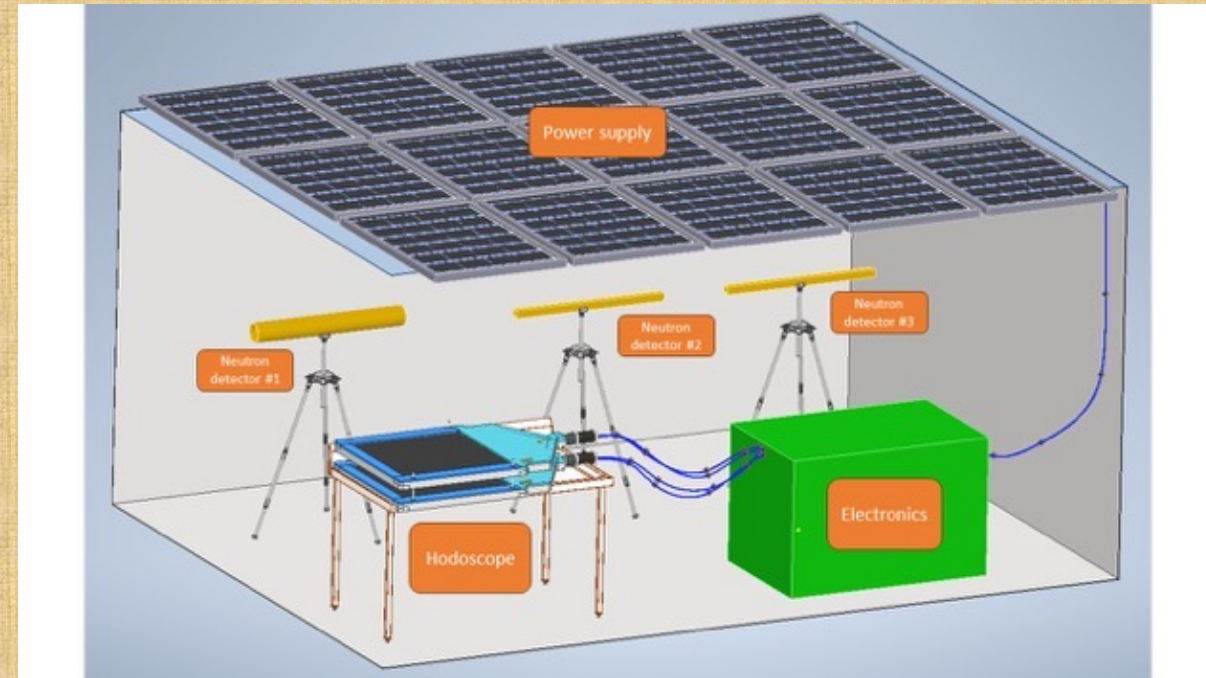


The Casona de Las Condes is a house located in the commune of Las Condes, Santiago de Chile. It is specifically located at 700 Fernández Concha street. It was declared a Historical Monument in 1982.



Mobile Cosmic Rays Detector Station

- We counts with great local data of earthquakes from the national seismographic network.
- We count with several geological fault.
- We are developing and building a *Mobile Cosmic Rays Detector Stations*.



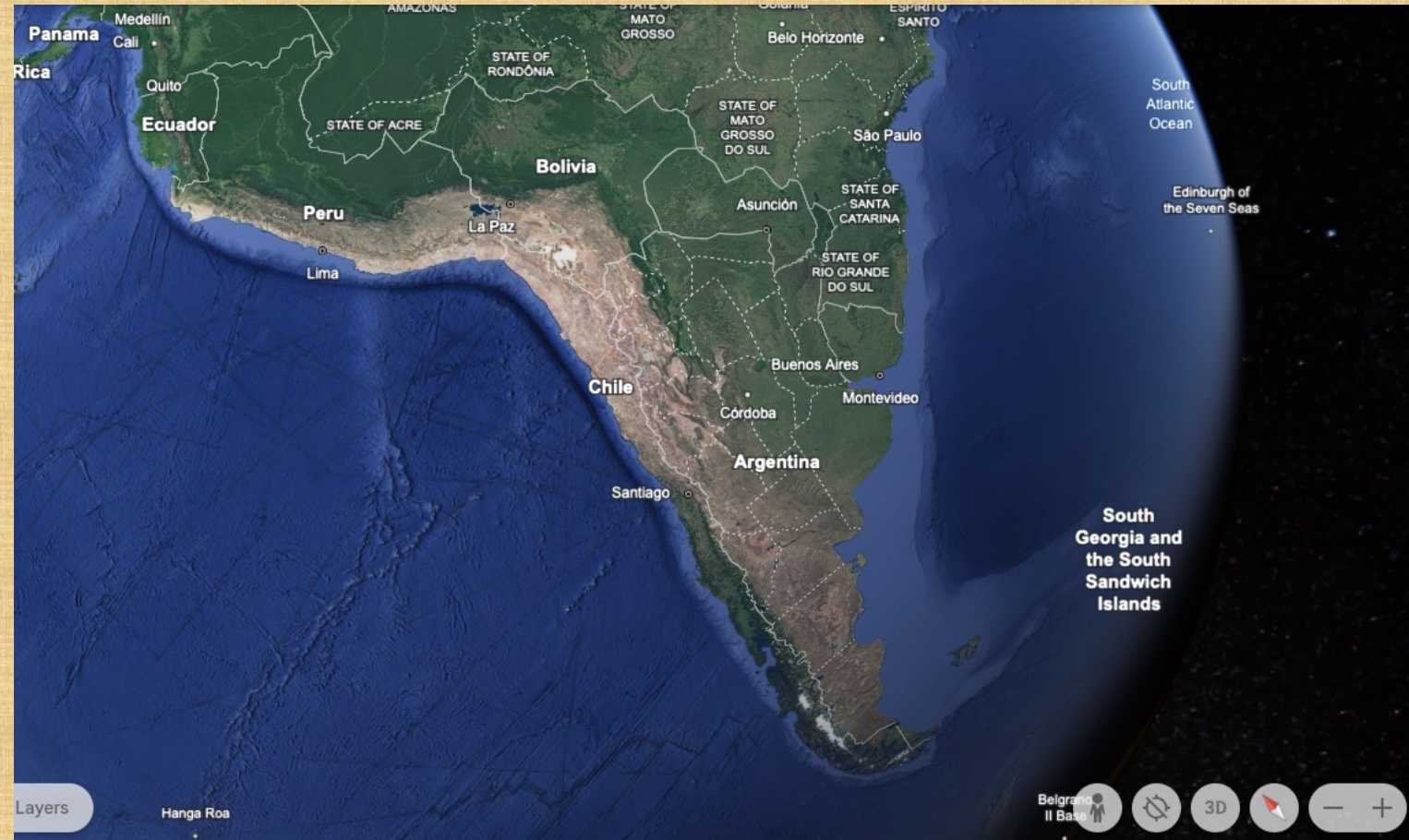
Radon measurements along Chile

- Radon is the second leading cause of lung cancer in the world.
- Chile does not have regulations concerning Radon concentration.
- Radon can be earthquake precursor as well.
- Currently, we are developing our own detectors.



We plan to carry out measurements in solid, water, and Surface.

We have faced some particular problems



Funding opportunities

National research and development agency

Agencia Nacional de Investigación y Desarrollo

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- EQUIPAMIENTO CIENTÍFICO Y TECNOLÓGICO MAYOR 2024** (Centros e Investigación Asociativa)
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Please contact me:
jilberto.zamora@unab.cl

Thank You