WORLD PENDULUM

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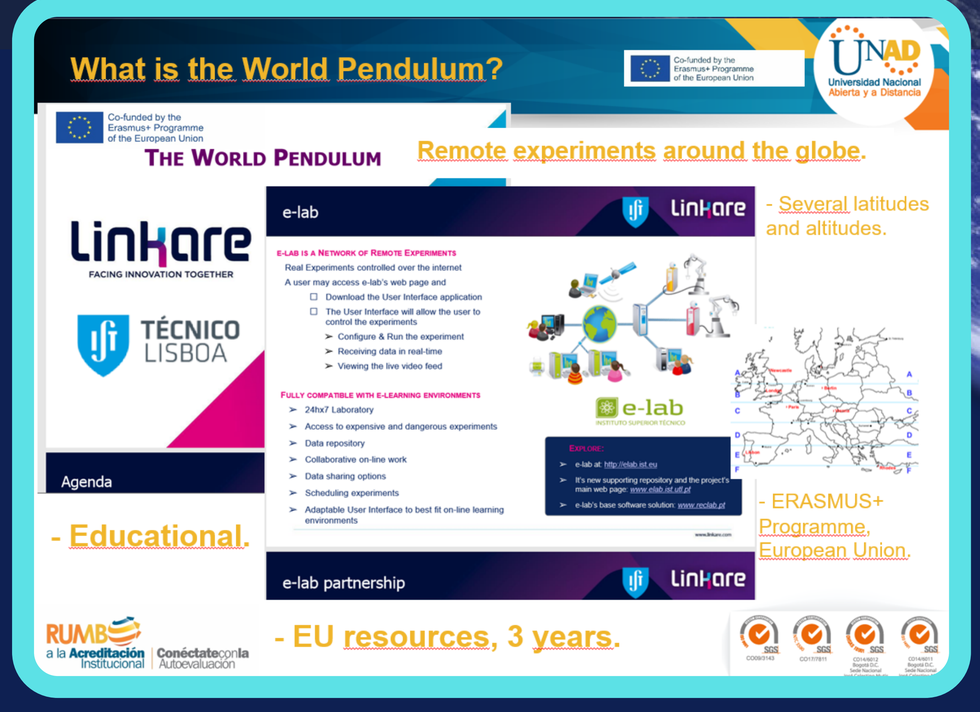
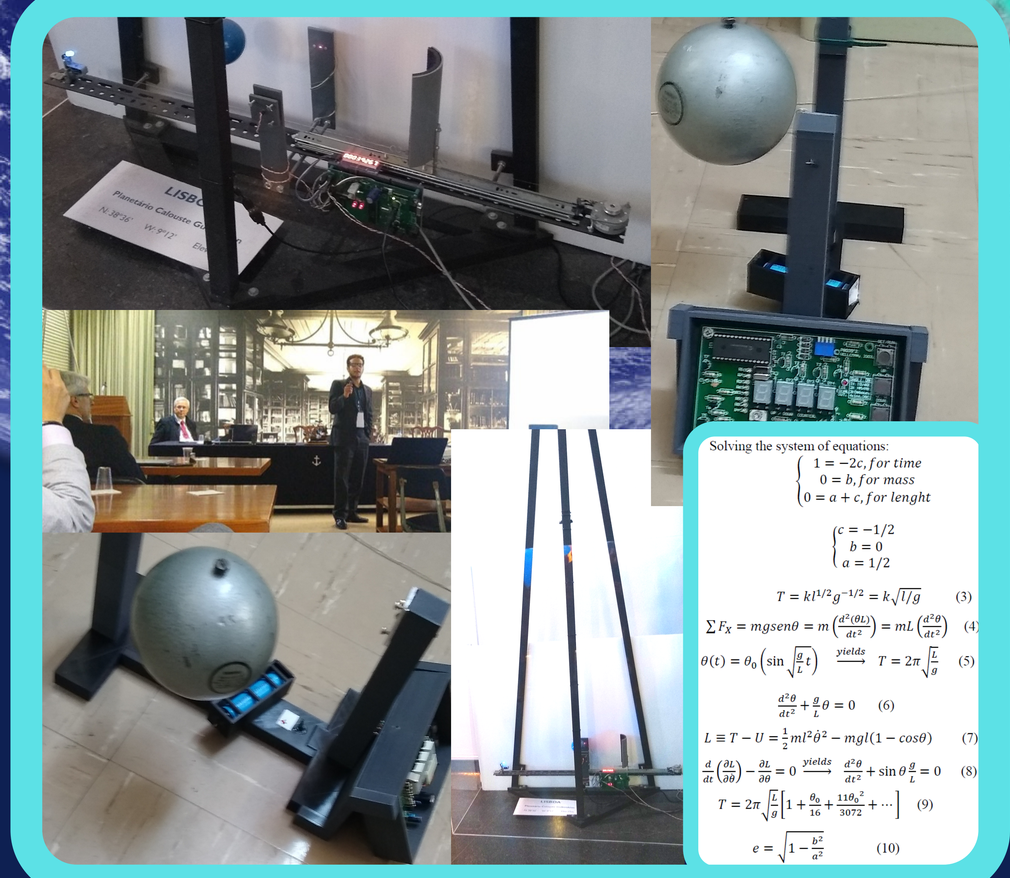
1 Objetives & Problem

- Physics education should enter to the digital networking era
- The *World Pendulum Alliance* can put together several organizations for a single goal: a global remote experiment which can measure gravity.



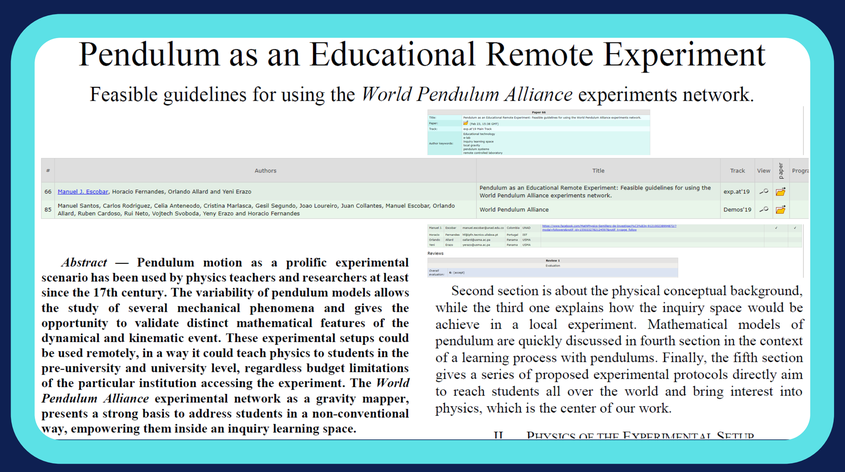
2 Methodology

- National and International Alliance for dissemination.
- Remote Accesed Local Pendulums in each country.



3 First Results

- Accepted Paper in 5th Experiment International Conference
- PIE Project in UNAD, Co-Financed Project in UNAD.
- Collaborations in process (Milano, Lausanne, Uniandes)



Pendulum as an Educational Remote Experiment

Feasible guidelines for using the *World Pendulum Alliance* experiments network.

#	Authors	Title	Track	View	Judgment	Progress
66	Manuel J. Escobar, Horacio Fernandes, Orlando Allard and Yeni Erazo	Pendulum as an Educational Remote Experiment: Feasible guidelines for using the World Pendulum Alliance experiments network.	exp.at'19			
85	Manuel Santos, Carlos Rodriguez, Celia Anteneodo, Cristina Marfasca, Gesil Segundo, Joao Loureiro, Juan Collantes, Manuel Escobar, Orlando Allard, Ruben Cardoso, Rui Neto, Vojtech Svoboda, Yeny Erazo and Horacio Fernandes	World Pendulum Alliance	Demos'19			

***Abstract* — Pendulum motion as a prolific experimental scenario has been used by physics teachers and researchers at least since the 17th century. The variability of pendulum models allows the study of several mechanical phenomena and gives the opportunity to validate distinct mathematical features of the dynamical and kinematic event. These experimental setups could be used remotely, in a way it could teach physics to students in the pre-university and university level, regardless budget limitations of the particular institution accessing the experiment. The *World Pendulum Alliance* experimental network as a gravity mapper, presents a strong basis to address students in a non-conventional way, empowering them inside an inquiry learning space.**

Second section is about the physical conceptual background, while the third one explains how the inquiry space would be achieve in a local experiment. Mathematical models of pendulum are quickly discussed in fourth section in the context of a learning process with pendulums. Finally, the fifth section gives a series of proposed experimental protocols directly aim to reach students all over the world and bring interest into physics, which is the center of our work.

II. PHYSICS OF THE EXPERIMENTAL SETUP

4 References

- Also our own paper and the DEMO approved in ExPat
- Collaborations in process (Milano, Lausanne, Uniandes)

Koike, N. (2018). Concurrent Remote Group Experiments in the Cyber Laboratory. In Online Engineering & Internet of Things (pp. 367-374). Springer, Cham.

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Tabunshchyk, G., Van Merode, D., Arras, P., & Henke, K. (2016, February). Remote experiments for reliability studies of embedded systems. In Remote Engineering and Virtual Instrumentation (REV), 2016 13th International Conference on(pp. 74-77). IEEE.

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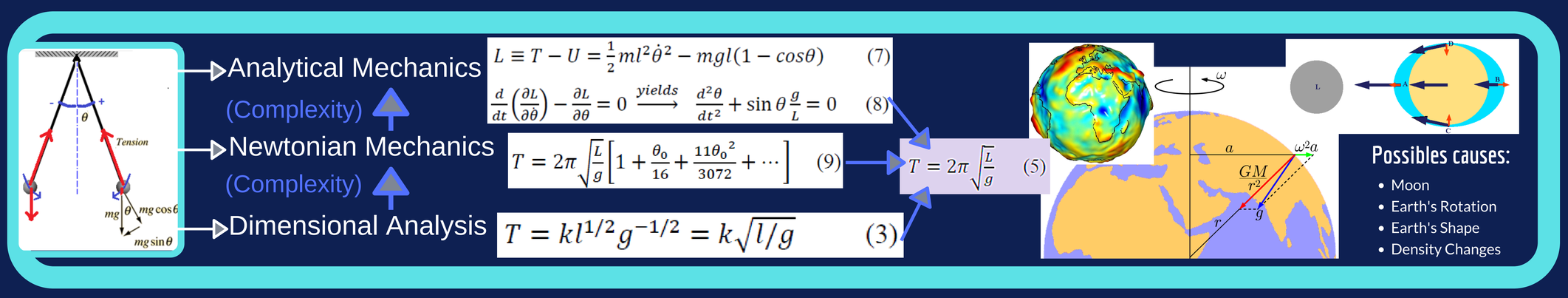
Castells, M. (2011). The rise of the network society (Vol. 12). John Wiley & Sons. Linkare e Instituto Técnico Lisboa (2016, February). The World Pendulum. E-Lab Partnership.

5 Theoretical BackGround

- Mathematics and physics from highschool to postgraduate level (Newtonian mechanics to Analytical Mechanics)
- Technological and educational work in Remote Experiments.



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