

# Design and Implementation of the **ExpLORa**: a Place for Physics and Mathematics Outreach

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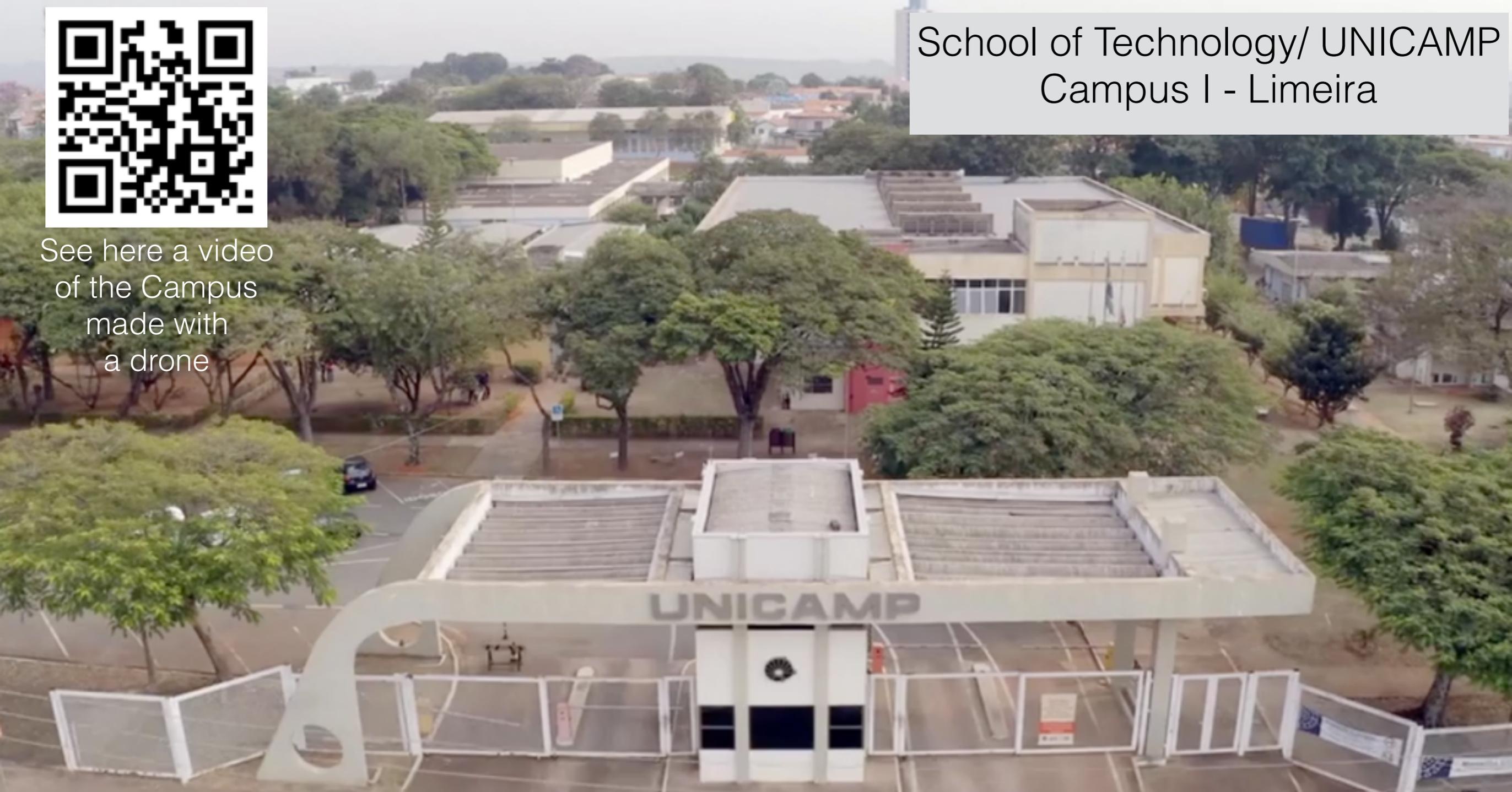


School of Technology/ UNICAMP  
Campus I - Limeira



See here a video  
of the Campus  
made with  
a drone

School of Technology/ UNICAMP  
Campus I - Limeira



Source: <https://www.upa.unicamp.br/>

11.800 m<sup>2</sup>

Environmental Engineering  
Telecommunications Engineering  
Transportation Engineering  
Information Systems  
Environmental Sanitation

> **1300**  
undergraduate students  
> **200**  
graduate students

“There are three principles on which human life flourishes, and they are contradicted by the culture of education under which most teachers have to labor and most students have to endure.”



Sir Ken Robinson

How to escape education's death valley  
TED Talk (2013) 11M

“The first is this, that human beings are naturally different and diverse.”

“The second principle that drives human life flourishing is curiosity.”

“And the third principle is this: that human life is inherently creative.”

“The role of a teacher is to facilitate learning.”

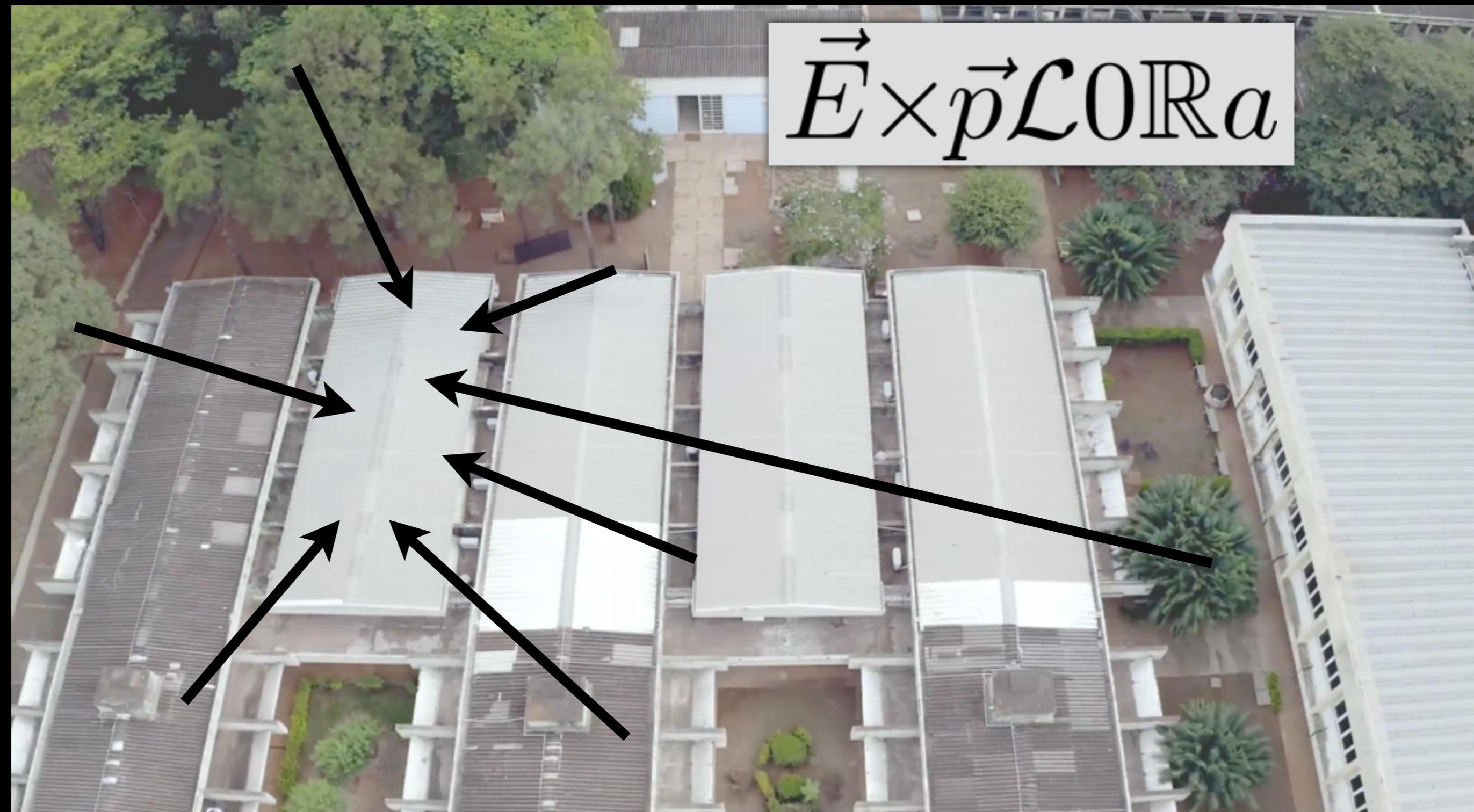
$\vec{E} \times \vec{p} \mathcal{L} O R a$

A place :

- to provide **different** and **diverse** ways of learning  
(sound, vision, touch, ...)
- to increase **curiosity**
- to allow visitors, students and teachers to be **creative**

A place **to facilitate learning**

$$\vec{E} \times \vec{p} \mathcal{LOR} a$$



Source: <https://www.upa.unicamp.br/>

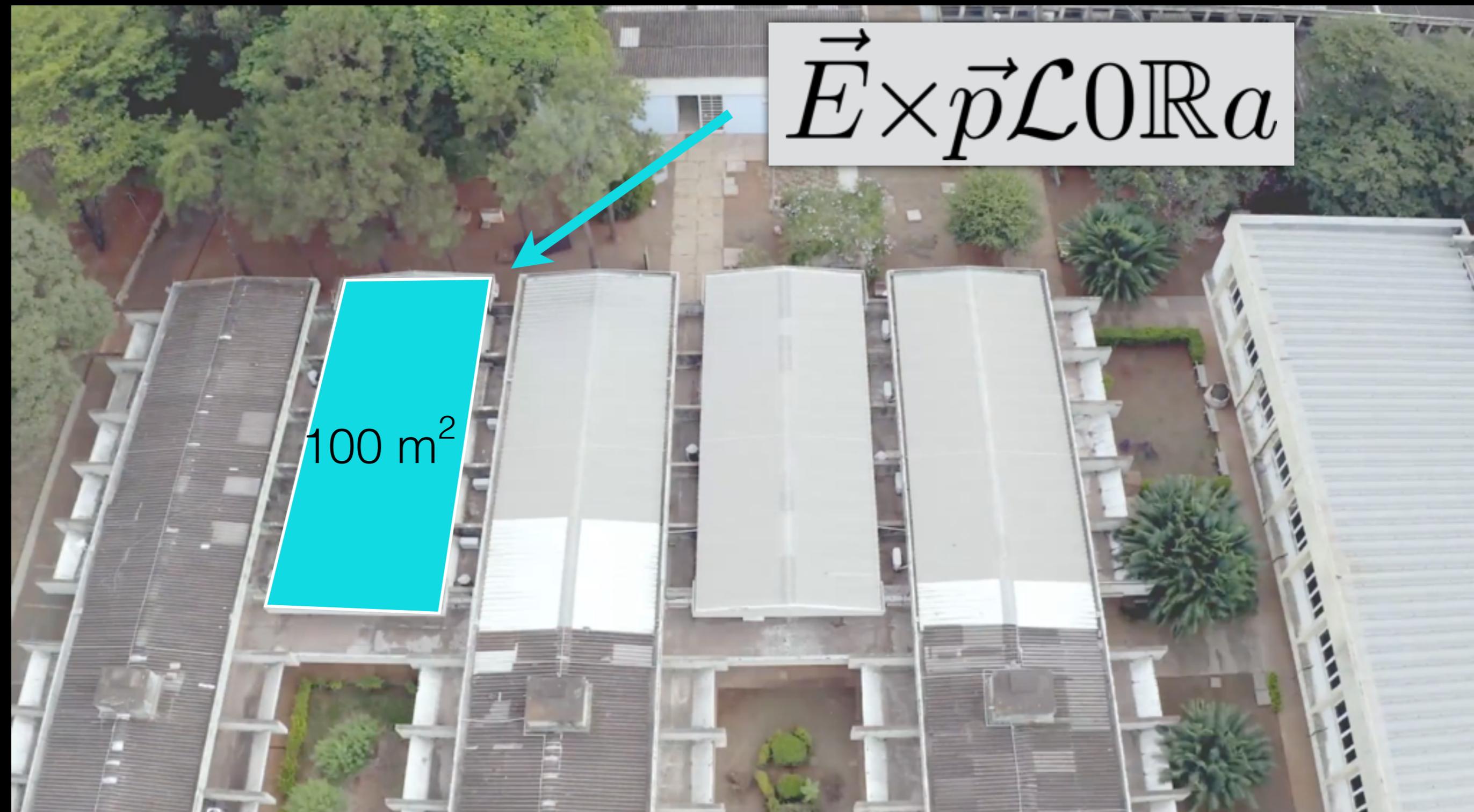
Physical  
collection

**~60**  
Apparatuses  
and equipments

**Physics**  
(Mechanics, Optics, Electricity,  
Magnetism, Fluids, Modern Physics,...)  
and  
**Mathematics**



$$\vec{E} \times \vec{p} \mathcal{L} \mathbb{R} a$$



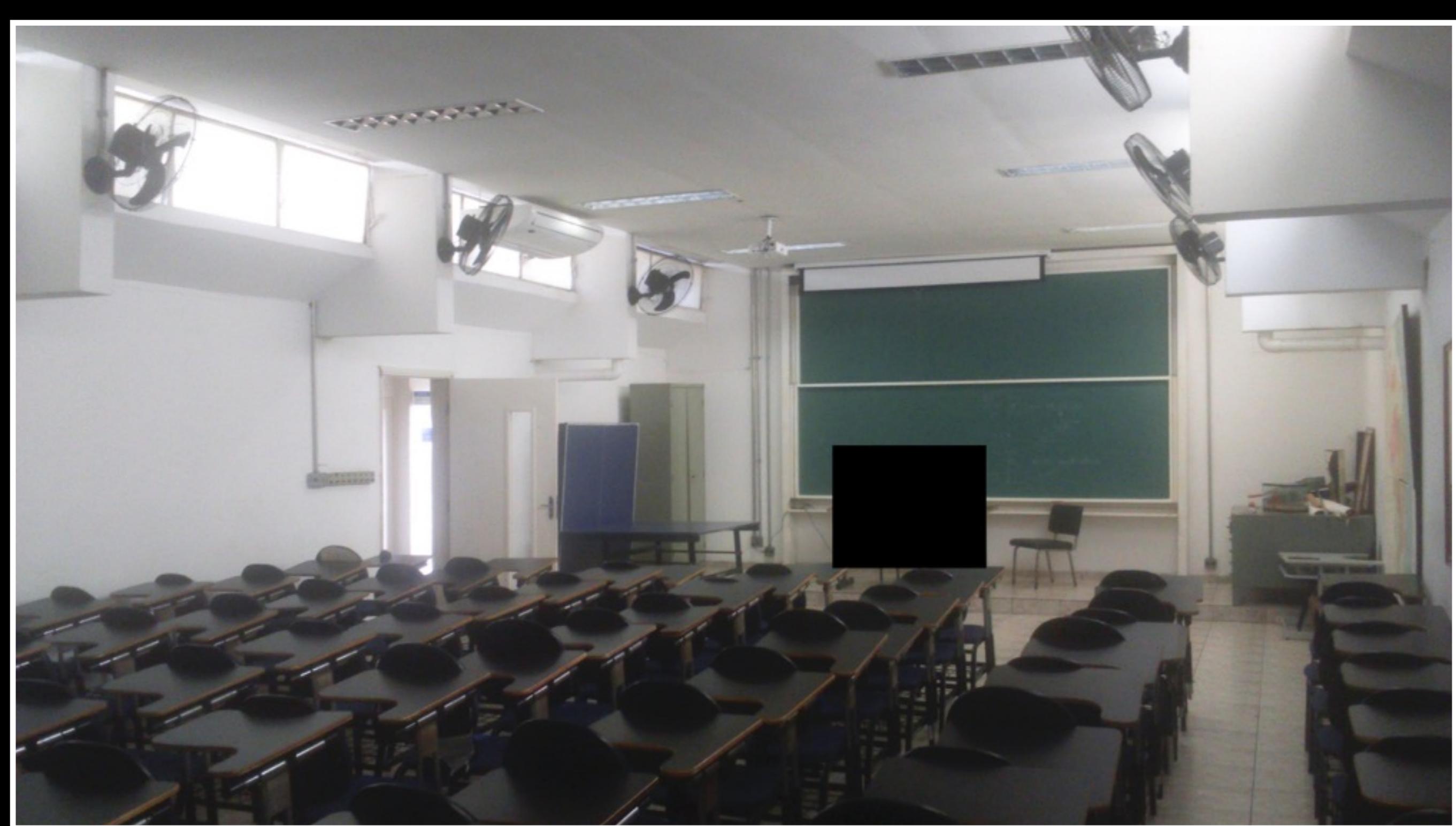
100 m<sup>2</sup>

Source: <https://www.upa.unicamp.br/>

Traditional  
class room

(remodeling, painting,...)

Visually attractive  
place



Traditional  
class room

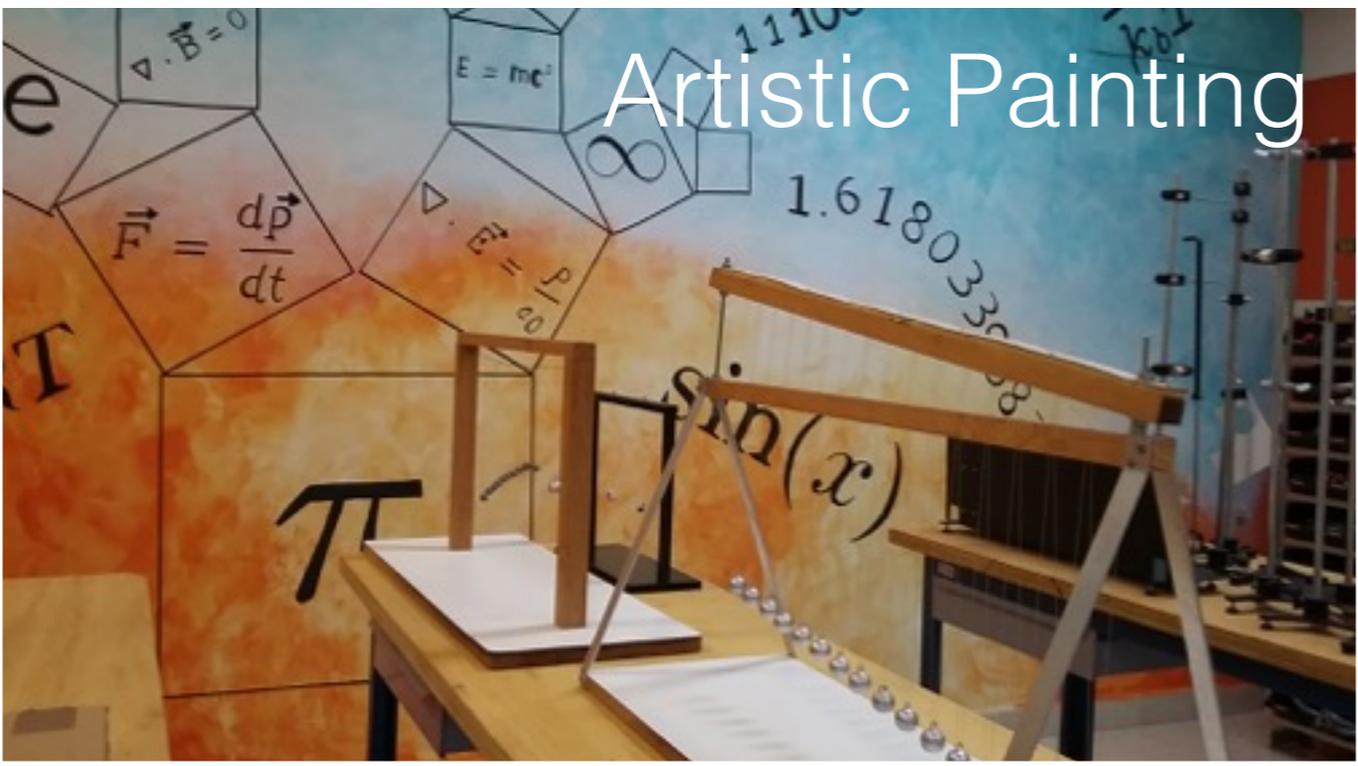


(remodeling, painting,...)

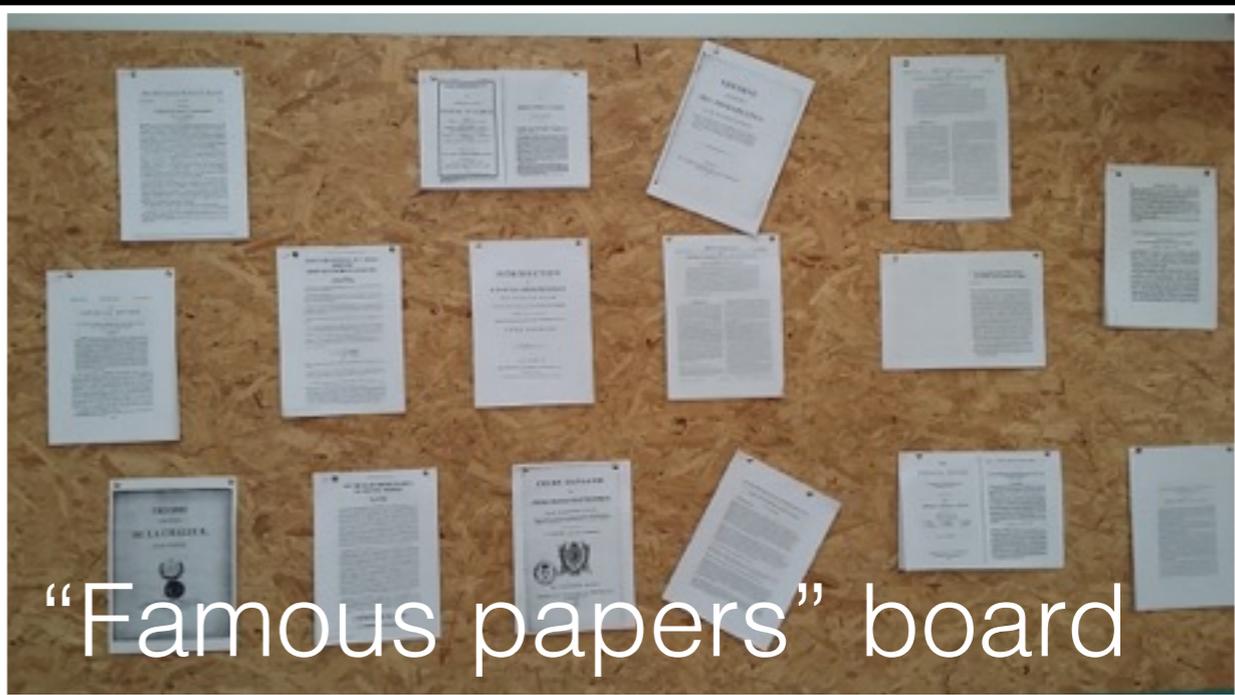


(remodeling, painting,...)

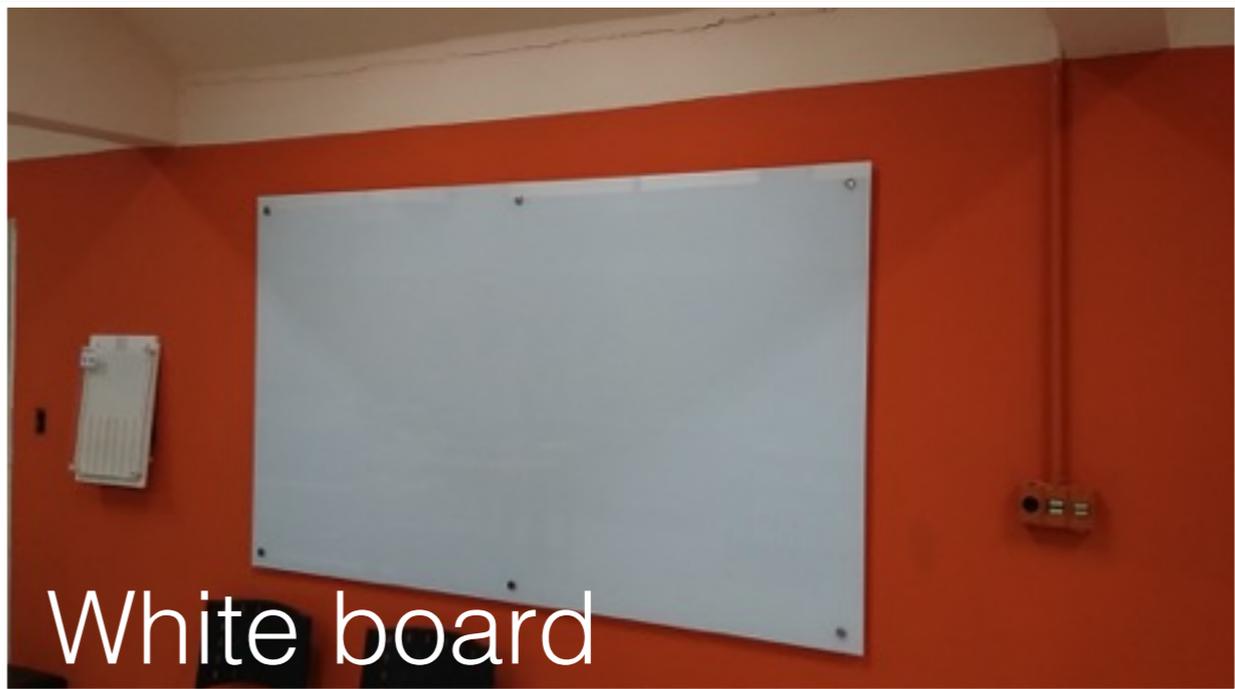
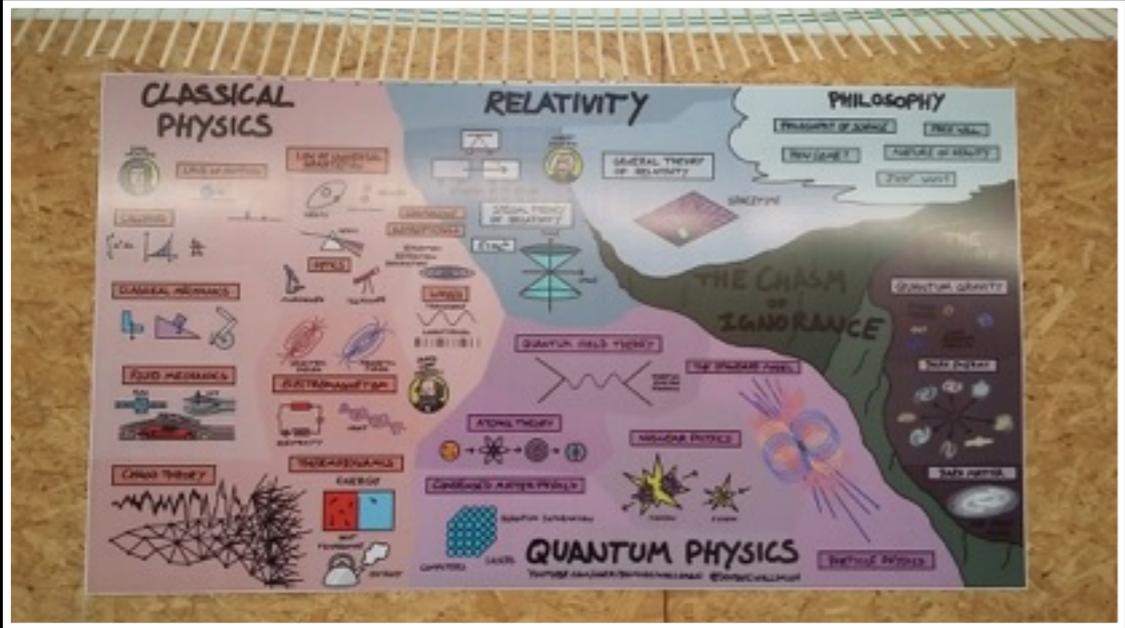




Artistic Painting



"Famous papers" board



White board



Illustrative posters



TV



<https://wordpress.ft.unicamp.br/explora/>



Webpage

# $\vec{E} \times \vec{p}$ LORa

Espaço de Exploração e Aprendizagem

O ExpLORa conta com várias montagens e demonstrações e com um museu virtual com materiais de apoio didático.

Faça um tour virtual aqui

Explore nosso mural artístico

Virtual tour

Project



Projeto Inicial

Veja como surgiu o projeto



Animações

Animações para auxiliar no entendimento dos conceitos

Confira aqui →



Acervo

Contamos com várias montagens, demonstrações e material de apoio didático

Confira aqui →



Palestras

Palestras relacionadas a conteúdos de Física e Matemática

Para saber mais →



Equipe

Quem somos

# Historico

2 de Julho, 2019

## Aquisição dos equipamentos

Reunião sobre forma de aquisição dos equipamentos e levantamento de informações necessárias para as compras.



2 DE MAIO,  
2019

Submissão do  
projeto



4 DE JULHO,  
2019

Projeto para a  
sala do Explora



May 2nd, 2019

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## Digital Collection



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### Equipe

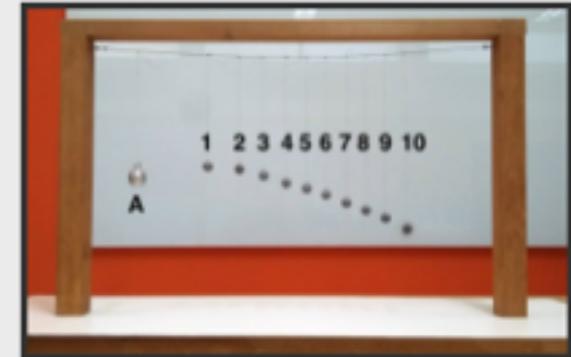
Quem somos



Pêndulo simples e oscilações →

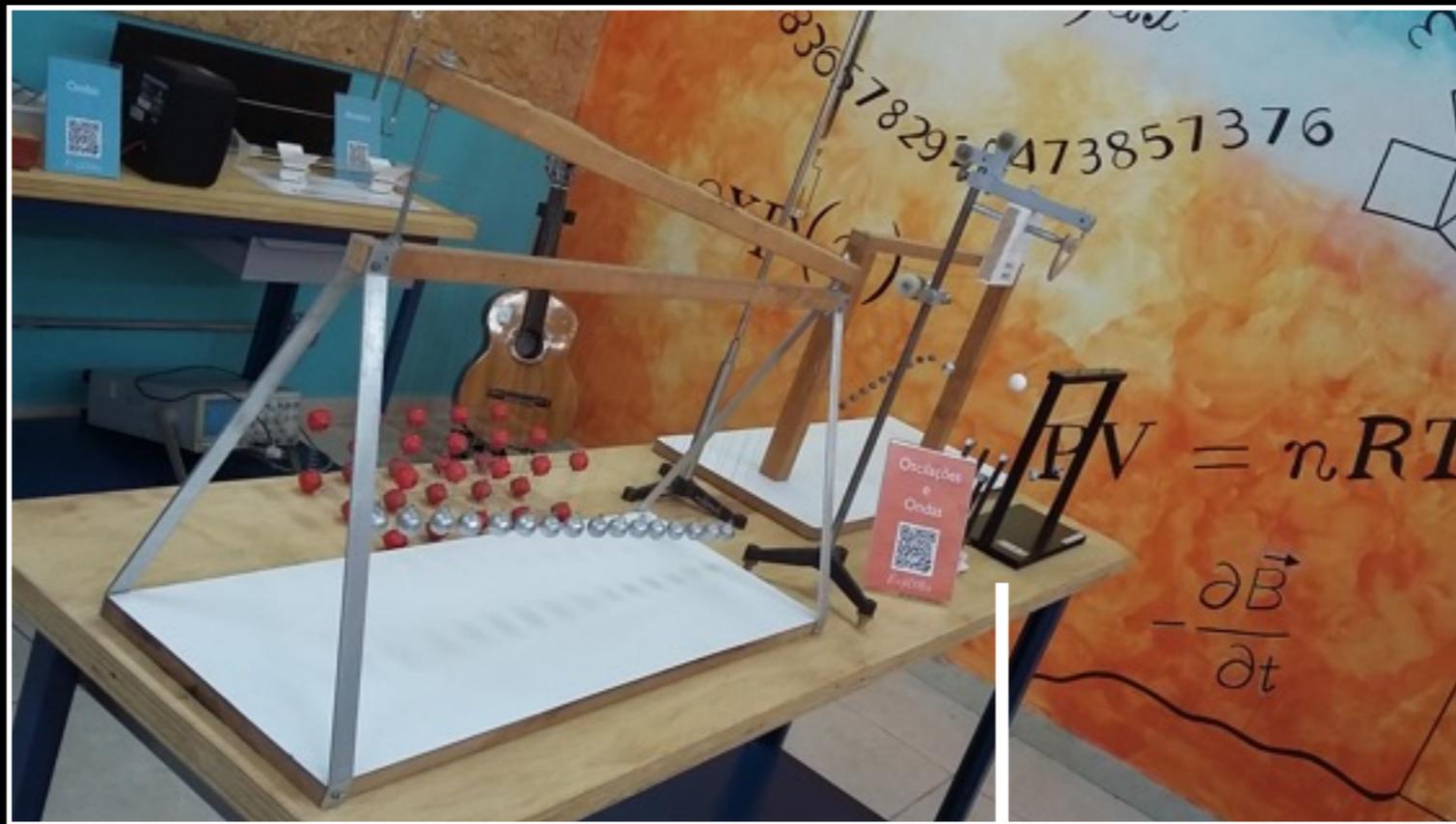


Violão e a ondulatória →



Pêndulos e ressonância →





**Webpage**

with text, video, interactive apps (PhET, Geogebra)...

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Animations  
(Manim/Python)



## Projeto Inicial

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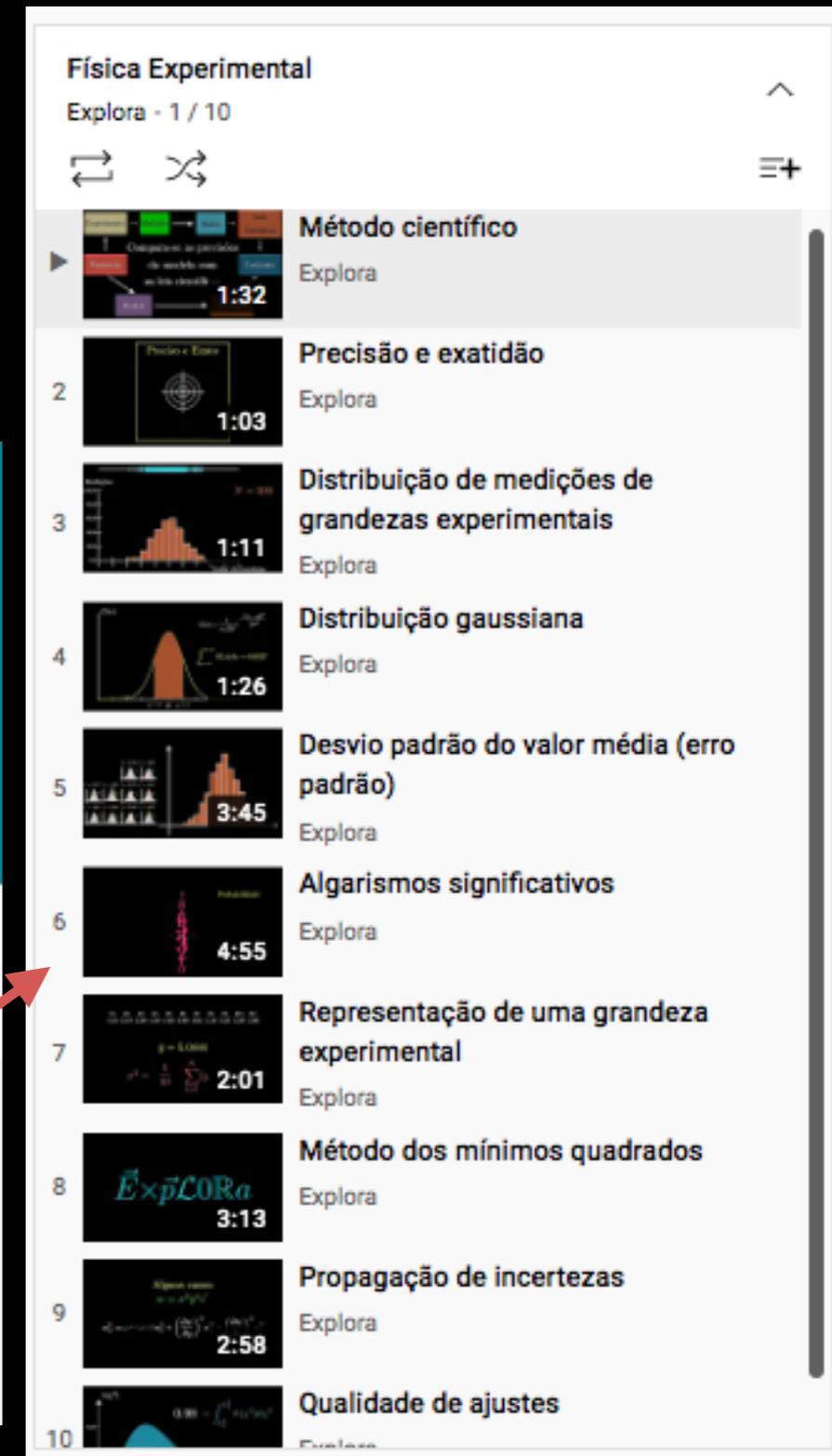


## Equipe

Quem somos

# Digital Collection

## YouTube Channel



$$\vec{E} \times \vec{p} \mathcal{L} \mathbb{R} a$$

Use planning:

- 1) Introductory Physics lab classes
- 2) Support for Physics and Math classes
- 3) Science divulgation events
- 4) Outreach courses (Manim/Python, Arduino, ...)
- 5) Projects with High School teachers and students

# Summary

Teachers

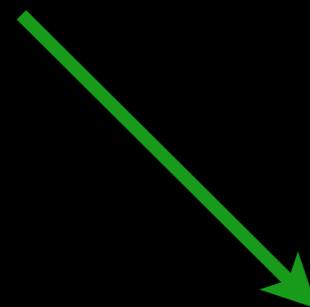
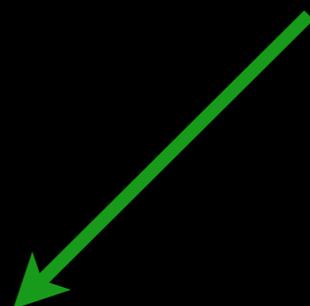
Students

University



$$\vec{E} \times \vec{p} \mathcal{L} O R a$$

A place **to facilitate learning**



Teachers

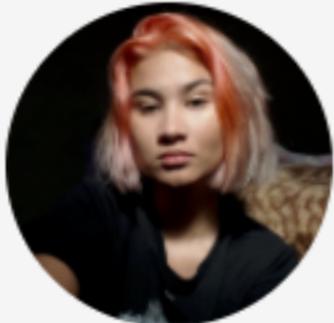
Students

Society

# Acknowledgements

## Students

### Webpage



Carinna Nunes



Francisco Oliveira

### Animations

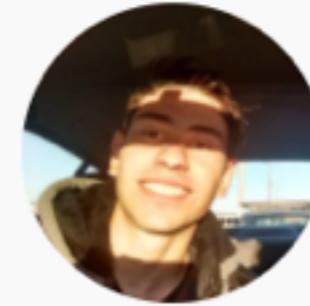


Ariel Tadeu da Silva



Eric Satoshi Suzuki Kushimoto

### Digital collection



William Gabriel de Oliveira

## Institutional Support

**Prof. Renato Falcão Dantas**

**Prof. Marta Siviero Guilherme Pires**

**Prof. Eloisa Dezen Kempter**

**Ricardo Henrique Cândido**

**Cláudio Mesi**

**Alexandre Pereira da Silva**

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