Studying physics: what to expect?

Andrea López Incera

3th October 2022

Nice to
meet you!

Bachelor in **Arquitecture** (Madrid, 1 year)

Bachelor in **Arquitecture** (Madrid, 1 year)

Bachelor in **Physics** (Madrid, 4 years)

Bachelor in **Arquitecture** (Madrid, 1 year)

Bachelor in **Physics** (Madrid, 4 years)

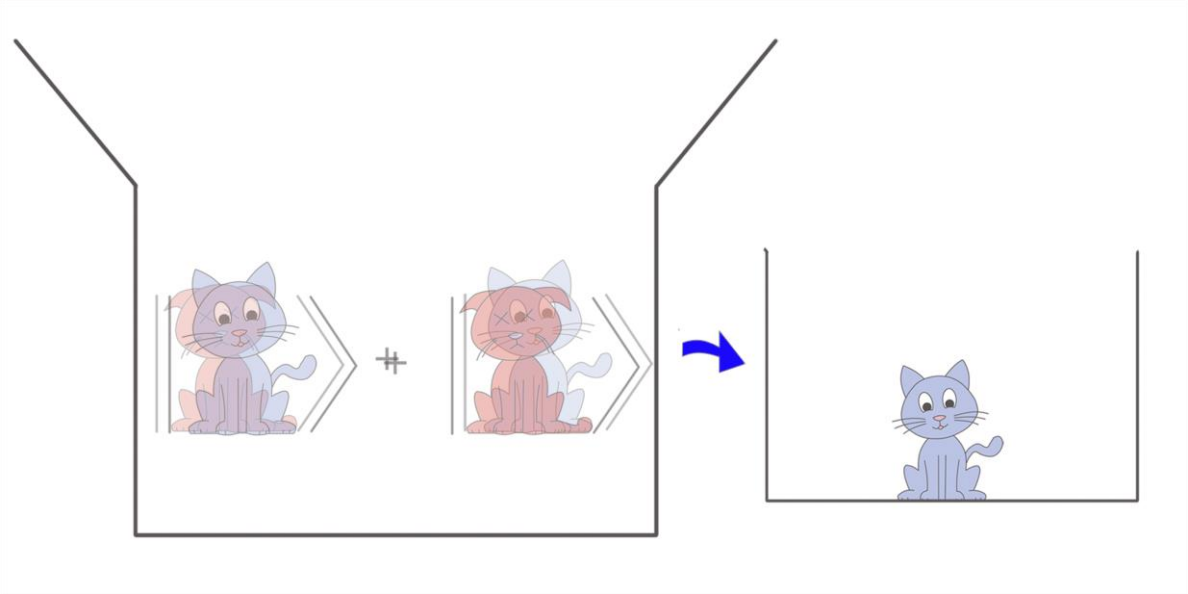
Master in **Quantum** Physics (Innsbruck, 2 years)

Thesis in **Physics** : *"Stability of macroscopic quantum states"*

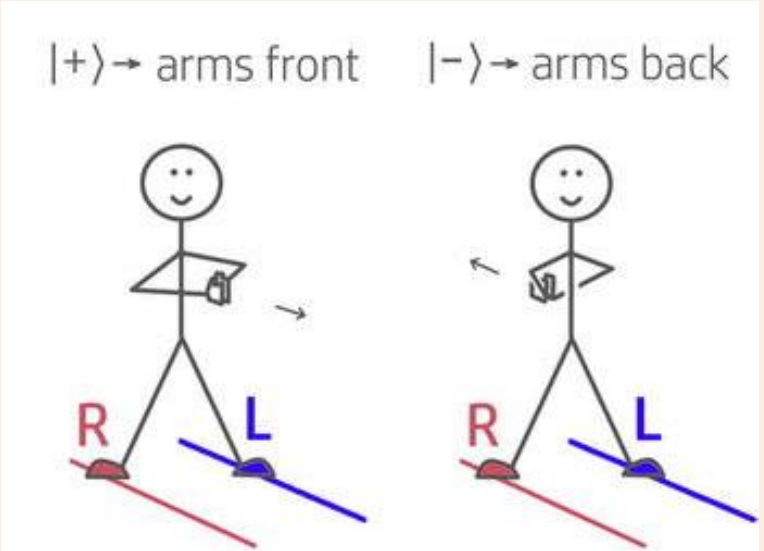
Thesis in **Didactics** : *"Entangle me!"*

My Master thesis

Stability of macroscopic quantum states



Entangle me!



Bachelor in **Arquitecture** (Madrid, 1 year)

Bachelor in **Physics** (Madrid, 4 years)

Master in **Quantum** Physics (Innsbruck, 2 years)

Thesis in **Physics** : *"Stability of macroscopic quantum states"*

Thesis in **Didactics** : *"Entangle me!"*

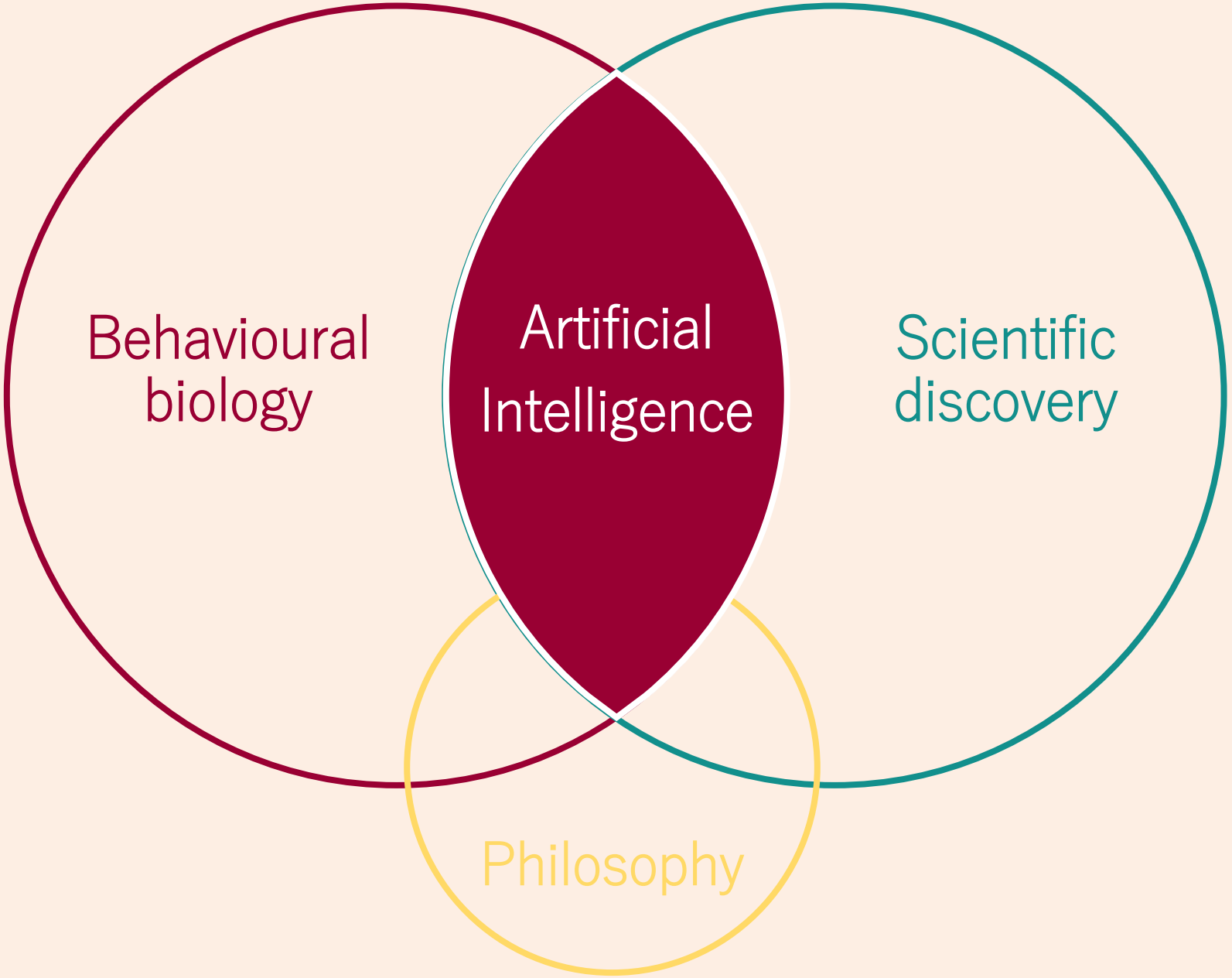
PhD in Physics (Innsbruck, already for 4+ years)

Artificial intelligence and **behavioural biology**

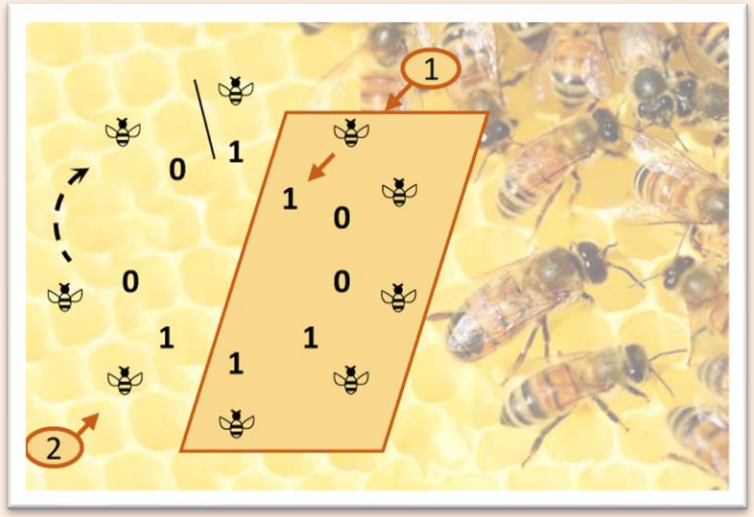
Artificial intelligence in the context of **scientific discovery**

Other projects: **Didactics, NYSE, Seeker**

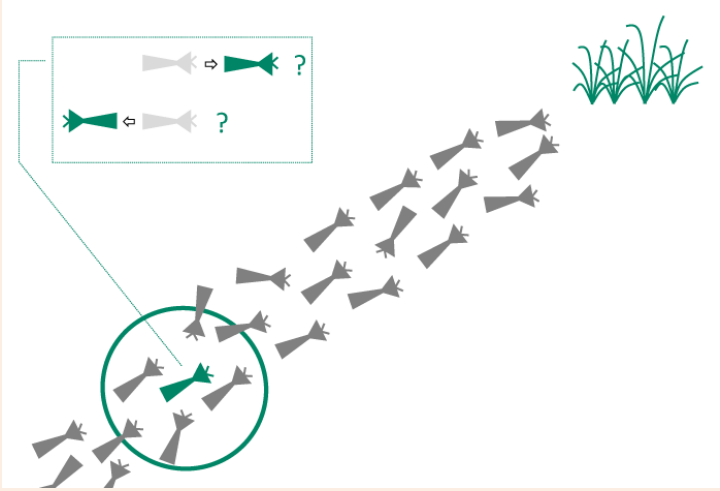
My PhD

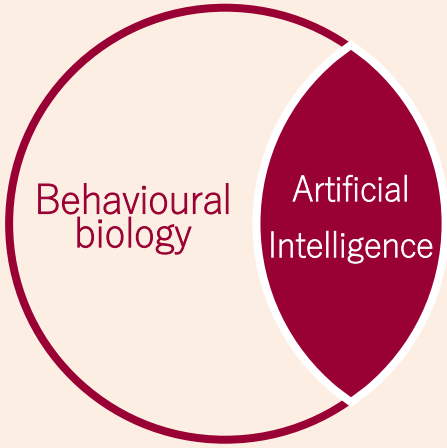

Behavioural biology
Artificial Intelligence
Scientific discovery
Philosophy

Collective defense of honeybees

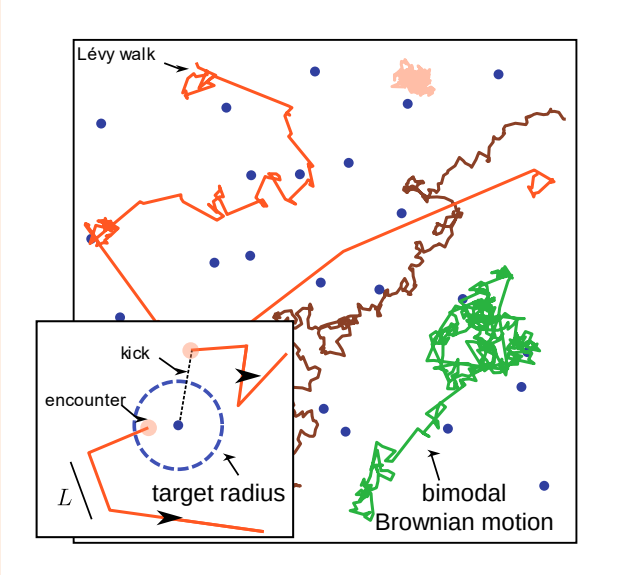


Collective motion to forage

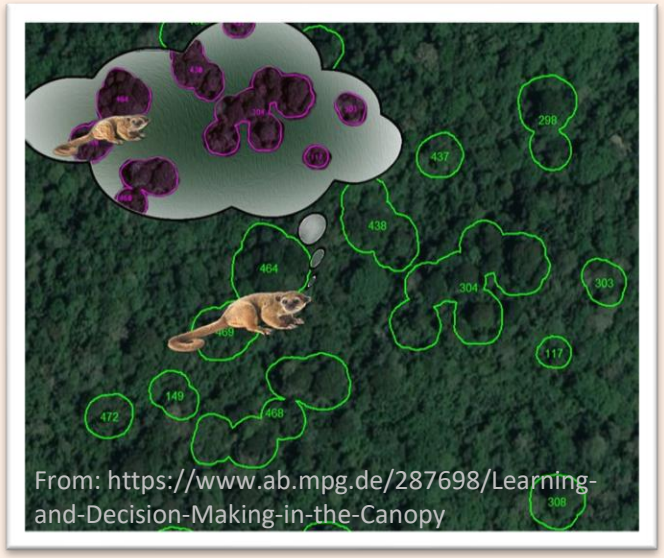




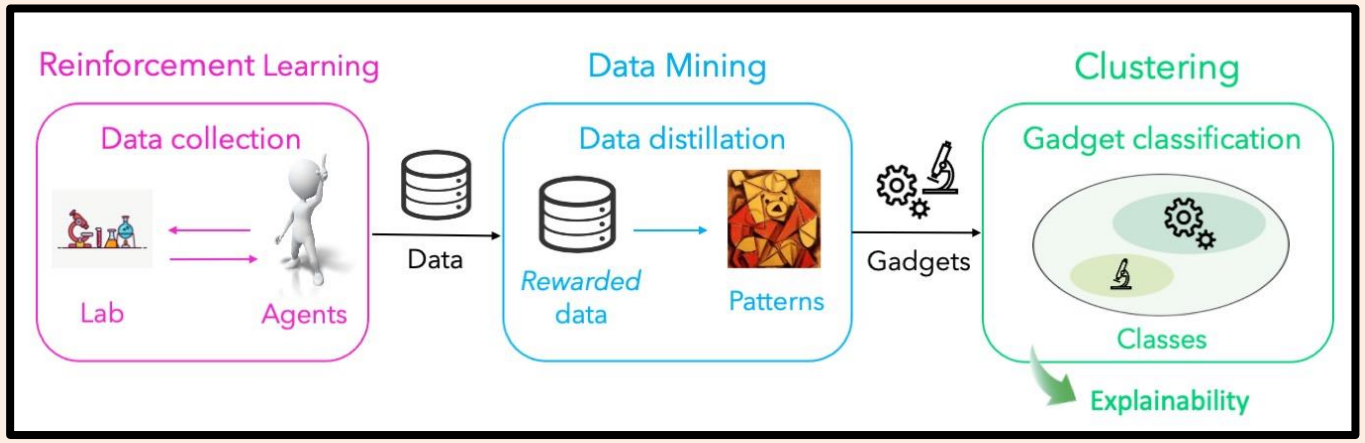
Foraging strategies

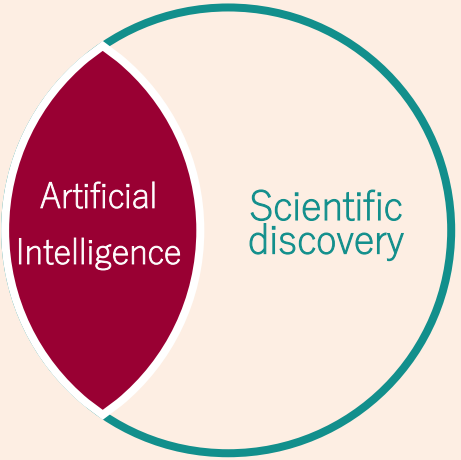


Kinkajou's navigation

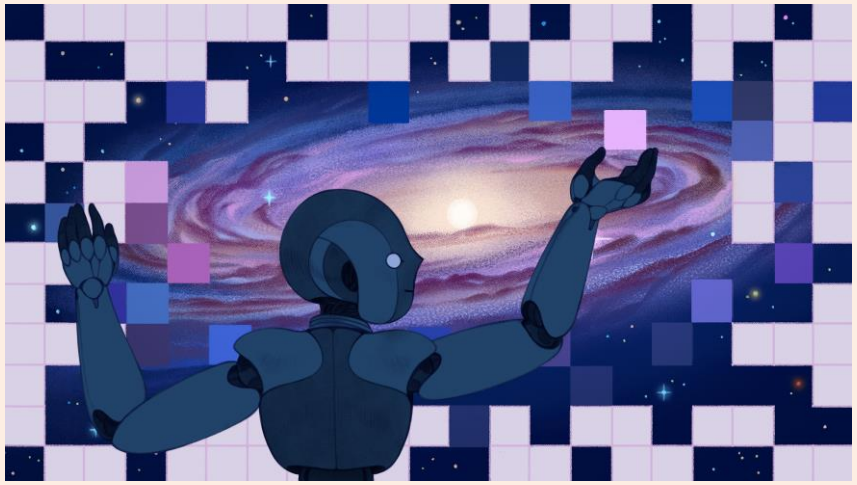


Automated gadget discovery





The impact of AI – assistants in science



Rachel Suggs for Quanta Magazine

Bachelor in **Arquitecture** (Madrid, 1 year)

Bachelor in **Physics** (Madrid, 4 years)

Master in **Quantum** Physics (Innsbruck, 2 years)

Thesis in **Physics** : *"Stability of macroscopic quantum states"*

Thesis in **Didactics** : *"Entangle me!"*

PhD in Physics (Innsbruck, already for 4+ years)

Artificial intelligence and **behavioural biology**

Artificial intelligence in the context of **scientific discovery**

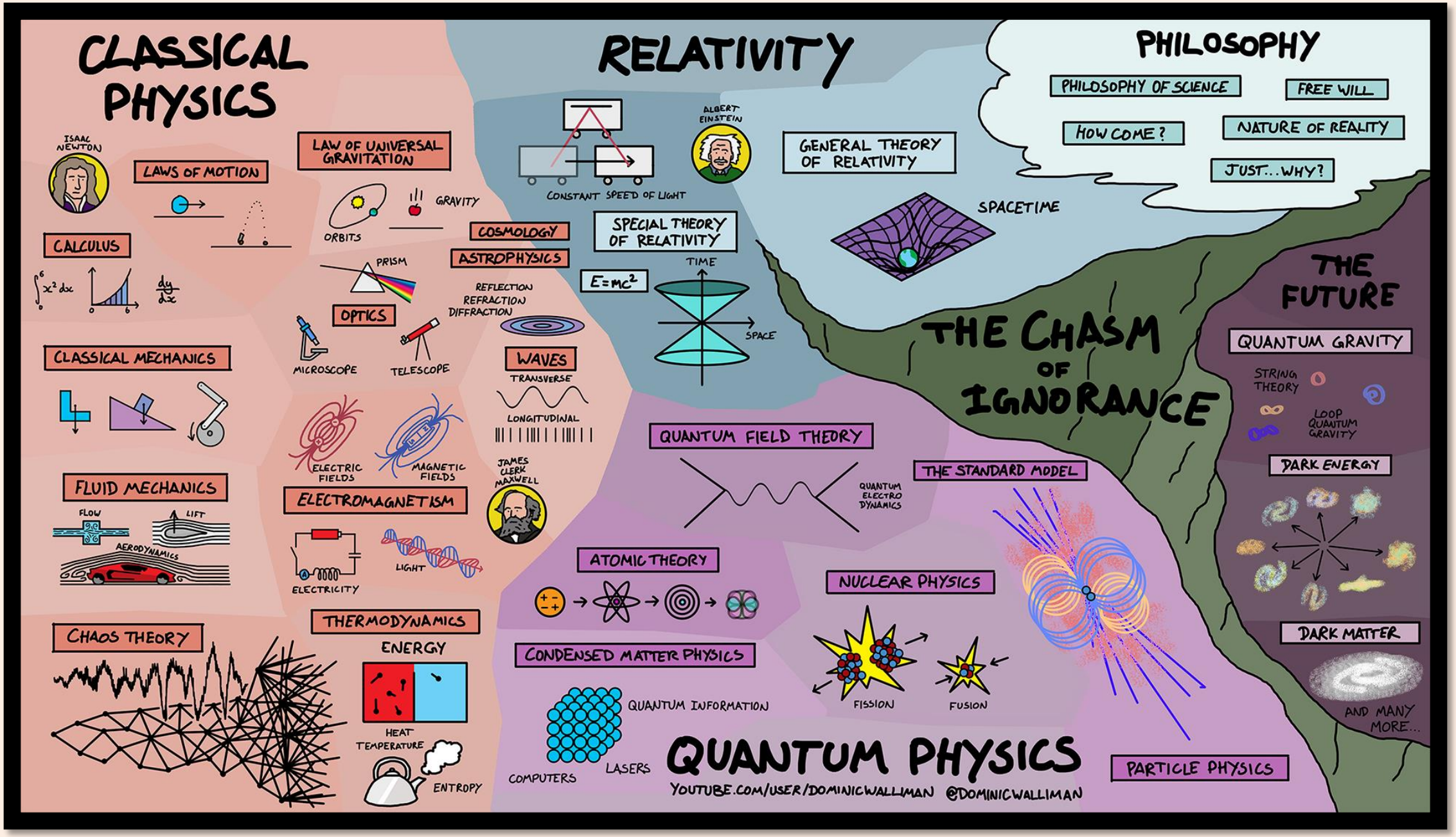
Other projects: **Didactics, NYSE, Seeker**

Studying physics

Learning about the Universe and more...

Why have *you* decided to study physics?

The map of physics (by Domain of Science)



Learning about the Universe...**and more!**

Work in a team

Collaborative dynamics

Learning about the Universe...**and more!**

Work in a team

Solve problems from scratch

Confidence, Creativity

Learning about the Universe...**and more!**

Work in a team

Solve problems from scratch

Analytical reasoning

Critical thinking, structural arguments

Learning about the Universe...**and more!**

Work in a team

Solve problems from scratch

Analytical reasoning

Open mindness

Curiosity, Imagination

About finding motivation

Motivations → goals

Goals → **motivations**

This is of course very personal…

…but you may get some insights from us!

1. What is it that **motivates you** the most to do physics every day?

2. Name one thing that **you struggled** with during your studies or PhD and what **you learned** from it.

Silvia Casulleras

“What motivates me the most is to think that I am helping push a tiny bit the border of the knowledge that we have about the physical world that surrounds us. And I have always enjoyed learning, that's also a source of motivation.”

“I struggled with accepting that research goes very slowly and you have to fail many times before getting a new and interesting result. Patience and having colleagues/supervisors to discuss about the project are the key solutions for me.”

Lukas Fiderer

“What motivates me is the challenge and fascination of contributing to scientific progress. I think physics is a good choice as a research field, but I would also find other fields exciting.”

“I struggled with finding enthusiasm for the topics in the physics curriculum, especially in the first few semesters. In retrospect, I understand better that physical theories build on each other, and therefore it is also important to learn centuries-old theories before getting to current research problems.”

Hendrik Poulsen Nautrup

“This is not only true for physics: I could enjoy doing anything so long as I can be creative, learn and explore new frontiers. Science and physics specifically, are just one particularly good way to express my creativity.”

“I almost burned out during my masters in the US succumbing to the ”hustle” work culture. I performed badly on some exams and then almost broke down during Christmas at home. When I returned to the US I decided that my attitude towards work had to change. My grades and general well being improved significantly by not working all day, but instead working efficiently, taking breaks and allowing myself time to relax and do sports.”

Lea Trenkwalder

“Motivation: Not forgetting the bigger picture.

Especially in the first few years of studying, while running from one exam to the next, it can be easy to lose sight of why you are studying physics. It can really help to remember the aspects that got you excited about the subject in the first place. For me, this entails taking time to engage in outreach activities. Other options could be, listening to a podcast, going to seminars, or reading a book.”

“Struggle: Knowing that staying in academia will entail moving to other countries.

I have spent most of my life in Innsbruck, so leaving Austria felt like a challenge for me. To better understand if I could call a different country my home, I decided to spend part of my Master's program abroad. My study experience in the UK was one of the most enriching experiences from an academic, as well as, a personal perspective.”

The **University**, a motivational environment

Different Universities have different **strengths** and *weaknesses*

Things I like about the University of Innsbruck

Focus on conceptual analysis

Proseminars: interactive, participation

* Professors are closer to students

Great research environment

Things I like about the University of Innsbruck

Focus on conceptual analysis

Proseminars: interactive, participation

* Professors are closer to students

Great research environment

Things I like about the University of Innsbruck

Focus on conceptual analysis

Proseminars: interactive, participation

* Professors are closer to students

Great research environment

Things I like about the University of Innsbruck

Focus on conceptual analysis

Proseminars: interactive, participation

* Professors are closer to students

Great research environment

NYSE job!

nyse_uibk

Wed 9th Nov	18.00	Opening event: PhD speed dating!
Wed 16th Nov	18.00	First talks

Free food and drinks!