

ENS Paris-Saclay • ivan.martinez-comas@inria.fr

Formation

ENS - Université Paris-Saclay

Saclay, France

PhD in translations between proof assistants.

Nov 2025 - Today

Title: Proving and automating the equivalence of types and functions between proof assistants.

Description: This project aims to create tools for proving and automating the equivalence of data structures of the proof assistants HOL Light and Rocq with the proof assistant Lean4.

It uses the logical framework `Lambdapi`, developed by Deducteam at LMF, which acts as a bridge between different proof assistants. The goal is to translate into Lean4 the libraries already translated to `Lambdapi` from other proof assistants.

After the translation, the project will prove (and automate such proofs) in Lean4 that the translated types and functions are equivalent to Lean4's native counterparts and those from `Mathlib`. For example, it would show that the translated natural numbers type and successor function correspond to Lean4's `Nat` and `Nat.succ`.

This allows theorems translated from other proof assistants to work directly with Lean4 and `Mathlib` types and functions.

Université Paris Cité

Master in Mathematical Logic and Computer Science.

Sept 2024–Sept 2025

Internship at the CEA: Studying type-safety in a Pure Subtype System framework with Algebraic Effects.

Spanish University of Distance Learning

Master in Big Data & Business Analytics.

Dec 2023–Sept 2024

University of Zaragoza, UNIZAR

Zaragoza, Spain

Bachelor in Mathematics.

2018-2023

Bachelor thesis in Set Theory: Showing the independency of the AC and the CH in ZF.

Erasmus at Universitié Paris-Saclay

Orsay, France

M1 Mathématiques Fondamentales.

2021 – 2022

Other research projects

Translation of verbose-lean4 to Spanish

Status: Under review

This project aims to bring proof assistants (Lean4 specifically) to mathematics undergrad level courses to help students understand proofs.

Formalization of Balinski's theorem

Status: Ongoing.

During my staying at ICARM's Lean summer school in Pittsburgh, US, during July 2026.

Languages

- Spanish: Native.
- English: C2 Level.
- French: B2 Level.

Other working experience

Private teaching

Mathematics teaching from highschool level to undergraduate courses (Algebra 1, Real Analysis, Set Theory). 2020-2025