

Letter of intent for Trimester Program, Prospects of Formal Mathematics and School

Dear Members of the Admission Committee,

I am writing to express my strong interest in both the trimester program, *Prospects of Formal Mathematics*, and the *school on Formal Mathematics*. I am particularly drawn to the program's focus on formalizing, checking, and managing mathematical knowledge in two aspects:

- (1) How it can be made more accessible to research mathematicians.
- (2) How it can help in the teaching of undergraduate mathematics.

These potentials aligns closely with my own professional goals. I elaborate them here.

- (1) My research interest lies in the field of geometric Langlands, especially in the p-adic context. I am thus captivated by how one can leverage progresses in
 - semantic search techniques to organize mathematical knowledge and streamline literature reviews.
 - new open source playgrounds such as LeanDojo to incorporate LLMs in theorem proving.

As someone who is currently taking a graduate course in [Natural Language Processing](#) and teaching a course in AI alignment, I feel that I could bring a unique perspective to the program.

- (2) I am deeply interested in the pedagogical applications of Formal Mathematics. I have been collaborating with a postdoc here at Johns Hopkins, Sina Hazratpour (who has experiences in teaching proof courses) on planning an honors calculus course that leverages the advantages of teaching in Lean. I see a strong opportunity for these formal methods to enhance student understanding. This year, I am teaching an [honors single variable course](#), although not currently in Lean, I believe this experience would give better guidelines on future planning of theorem proving into a normal course.

I am excited about the prospect of joining the program and contributing to its groundbreaking work. Thank you for considering my application. I am looking forward to the possibility of discussing my application in further detail.

Bibliography

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