



IPM Algebraic Geometry Immersion Program

Khansar, Summer 2026

Part of *Decoding Dimensions* — IPM School of Mathematics

What is this program?

Have you spent a semester learning scheme theory and come away feeling that you understand the definitions, but not yet the mathematics behind them? That the constructions make sense on paper, but you would not know where to begin if asked to use them independently?

This program is designed for exactly that moment. You are in the right place.

The *IPM Algebraic Geometry Immersion Program*, nicknamed *Schemeathon*, brings together approximately 20 advanced students in Khansar for seven days of intensive but unhurried mathematical work: solving problems together, reading carefully, discussing ideas from morning until evening, and gradually building the mathematical fluency that is difficult to acquire through lectures alone. It is part of [Decoding Dimensions](#), a long-term program in algebraic geometry and number theory at the IPM School of Mathematics.

If you have been looking for an opportunity to work alongside peers who share your interests, and to get a first glimpse of where algebraic geometry leads, this is it.

Who is it for?

The program is designed for students who have completed a course in algebraic geometry covering the theory of schemes, at a level comparable to the first four chapters of Görtz and Wedhorn, *Algebraic Geometry I. Schemes, with Examples and Exercises*.

You do not need to be a graduate student to participate. Strong and motivated advanced undergraduates who have followed the relevant material are equally encouraged to apply.

What will we do?

The camp is not a lecture course. Its philosophy is that mathematical fluency develops through active engagement: solving problems, discussing ideas, reading carefully, and learning to ask the right questions. The atmosphere is intended to resemble a mathematical research group rather than a classroom.

Each day is built around three activities.

- **Problem sessions** form the core: participants work in small groups on carefully designed problem sets, organized by difficulty, that consolidate and extend the course material. These are invitations to explore examples, construct counterexamples, build intuition, and connect ideas from different parts of the theory. The goal is not to cover ground quickly, but to sit with ideas long enough that they actually make sense.
- **Guided reading** from complementary sources accompanies the problem sessions, paired with focus questions that make reading an active rather than passive experience.
- Each evening, a **Scheme Clinic** brings the group together to discuss questions and confusions from the day, possibly submitted anonymously and openly addressed.

A small number of expository talks, given by senior mentors, will introduce selected topics beyond the scope of a standard course and glimpses of the broader landscape of modern algebraic geometry.

Participants will also work in small groups on short collaborative mathematical projects, which they will present during the closing **Algebraic Geometry Festival**.

In short, the purpose of the camp is not to learn more algebraic geometry, but to become better at doing algebraic geometry.

Pacing and setting

Seven days of mathematics can be exhausting if not well-paced. The schedule alternates between intensive and lighter days, with some free afternoons, informal discussions over meals, and at least one half-day excursion built into the program. Khansar is a quiet and beautiful setting, well-suited to the kind of sustained but unhurried engagement that real mathematical progress requires.

Senior mentors, with expertise in algebraic geometry, will be present throughout the camp, available for informal discussions, guidance during problem sessions, and expository presentations.

Organizer

The program is organized by Mohammad Hadi Hedayatzadeh, Associate Professor at the IPM School of Mathematics.