

# Simons Lectures in Mathematics

## Spring, 2021



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## $p$ -adic Algebraic Geometry

The last decade has witnessed tremendous progress in algebraic geometry in a  $p$ -adic setting: new tools have been introduced, unexpected connections between different areas of mathematics have emerged, and longstanding problems have been solved. In this lecture series, I'll survey some of the developments in this area.

More precisely, the first lecture will be an overview of some of the major results in the area. The second lecture will explain the origins (partially in homotopy theory, partially in the Langlands program) and applications of recently discovered  $p$ -adic cohomology theories. The final talk will be dedicated to progress on the  $p$ -adic Riemann-Hilbert problem and its implications for birational geometry.

### Lecture 1: Overview

Monday, April 12, 2021, 4:30 – 5:30 pm, online

### Lecture 2: Prismatic cohomology

Tuesday, April 13, 2021, 4:30 – 5:30 pm, online

### Lecture 3: $p$ -adic Riemann-Hilbert Correspondence

Thursday, April 15, 2021, 2:30 – 3:30 pm, online