



# Theoretical Statistics and Mathematics Unit, Kolkata INDIAN STATISTICAL INSTITUTE

## SEMINAR

(5<sup>th</sup> Lecture)

Date: September 04, 2025

Time: 02:30 PM

## VENUE:

**L- Infinity**

(5<sup>th</sup> Floor, A.N. Kolmogorov Bhavan), ISI Kolkata

## TITLE:

**Perfectoid Spaces**

## SPEAKER:

**Om Sai**

ISI Kolkata

## ABSTRACT:

*Perfectoid spaces were developed by Peter Scholze [1] in the last decade from which he deduced Deligne's weight monodromy conjecture in certain cases. Since then the theory has found many applications in  $p$ -adic geometry and related areas.*

*In this weekly lecture series, I aim to develop the theory of perfectoid spaces following Bhargav Bhatt's notes [2]. In the first lecture I'll talk about Perfections and Tilting for a ring and discuss some properties.*

*References: [1] P. Scholze, Perfectoid spaces, Publ. Math. Inst. Hautes ´ Etudes Sci. 116 (2012), 245-313.*

*[2] B. Bhatt, Lecture notes for a class on Perfectoid spaces.*

*[3] O. Gabber and L. Ramero, Almost ring theory, Lecture Notes in Math. 1800, Springer (2003).*

*[4] G. Faltings,  $p$ -adic Hodge theory, J.Amer.Math. Soc. 1(1) (1988), 255–299.*

*[5] R. Huber. Ètale cohomology of rigid analytic varieties and adic spaces. Aspects of Mathematics, E30. Friedr. Vieweg & Sohn, Braunschweig, 1996.*

**ALL ARE CORDIALLY INVITED**