

# INTEGRAL $p$ -ADIC HODGE THEORY

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In this series of lectures I will provide an account of joint work with Bhargav Bhatt and Peter Scholze in integral  $p$ -adic Hodge theory. The goal will be to give a relatively detailed description, with full proofs whenever possible, of the construction of a new  $p$ -adic cohomology theory, for proper smooth (formal) schemes over the ring of integers of  $\mathbb{C}_p$ , which compares well integrally with the associated  $p$ -adic étale, crystalline, and de Rham cohomologies. Although some previous experience with perfectoid spaces and the pro-étale topology may be useful, the necessary results from these theories will be recalled and the lectures should be largely self-contained, including also the necessary background on Langer-Zink's relative de Rham-Witt complex, which is an essential tool for our construction.