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*Applications of finite and  $p$ -adic fields to complex algebraic geometry*

The arithmetic properties of finite and  $p$ -adic fields and the topological aspects of complex geometry are intricately linked. Starting with the Weil conjectures and ensuing theories, this talk will span a narrative arc between classical and recent applications of this connection, with a particular focus on those regarding moduli spaces of Higgs bundles. Joint work with de Jong, Esnault, Wyss, and Ziegler will be discussed during the talk's second half.