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Foliations on Shimura varieties in positive characteristic

In joint work with E. De Shalit (Hebrew U) we developed a theory of foliations on Shimura varieties in positive characteristic, offering as "case studies" the examples of Hilbert modular varieties and unitary Shimura varieties. Those reveal intimate connections with modular forms mod p , Shimura varieties with parahoric level structure, inseparable morphisms and deformation theory. I will provide an overview, using two particular examples: Hilbert-Blumenthal surfaces and Picard modular surfaces.