

Shimura varieties, torsion classes, and Galois representations

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In this talk, I will describe joint work with Peter Scholze on torsion in the cohomology of certain unitary Shimura varieties. I will explain how the theory of perfectoid spaces and p-adic Hodge theory give new insights into the geometry and cohomology of Shimura varieties. I will also mention applications of these results to elliptic curves over imaginary quadratic fields, joint with Allen, Calegari, Gee, Helm, Le Hung, Newton, Scholze, Taylor, and Thorne.