Ana Caraiani
University of Bonn

Galois representations and torsion classes

I will describe joint work in progress with Allen, Calegari, Gee, Helm, Le Hung, Newton, Scholze, Taylor, and Thorne on potential modularity for elliptic curves over imaginary quadratic fields. The key ingredients are a version of the Taylor-Wiles patching argument due to Calegari and Geraghty, and a result on torsion in the cohomology of Shimura varieties that is joint with Scholze. I will focus on explaining the difficulty in the imaginary quadratic case and how Calegari-Geraghty method comes to the rescue.