Class number formulae for some Shimura varieties of low dimension

Abstract:

The class number formula connects the residue of the Dedekind zeta function at $s=1$ to the regulator, which measures the covolume of the lattice generated by logarithms of units. Beilinson defined a vast generalization of the regulator morphism and conjectured a class number formula associated to the cohomology of any smooth proper variety over a number field. His formula provides arithmetic meaning for the orders of the so-called trivial zeros of $L$-functions at integer points as well as the value of the first nonzero derivative at these points.

We study this conjecture for the middle degree cohomology of compactified Shimura varieties associated to unitary groups of signature $(2,1)$ and $(2,2)$ over $\mathbb{Q}$. We construct explicit Beilinson-Flach elements in the motivic cohomology of these varieties and compute their regulator. This is joint work with Aaron Pollack.

Special Note:
There will be a pre-talk at 1:20PM for graduate students and postdocs in AP&M 7421.

Host: Kiran Kedlaya

Thursday, February 22, 2018
2:00 PM
AP&M 7421