Department of Mathematics,
University of California San Diego

* *

Department Colloquium

Romyar Sharifi

UCLA

Some connections between topology and arithmetic

Abstract:

This talk will feature an idiosyncratic take on an underlying theme in my research program, that topology and geometry in higher dimensions can be used in describing arithmetic phenomena in lower ones. I hope to explain why there might be such a phenomenon, while indicating how unexpectedly deep it appears to be. For instance, here's an interesting question that doesn't appear to have been much studied but ties in closely with joint work with Akshay Venkatesh: when do two integer polynomials in a single variable x that are products of powers of x and cyclotomic polynomials sum to a third? Curiously, the path towards an answer appears to intertwine with the homology of modular curves, as well as a chain complex computing the homology of a circle.

Cristian Popescu

November 17, 2022

4:00 PM