
ILA VARMA, University of Toronto

Geometry of Numbers Methods for Counting in the Cusp

In joint work with Arul Shankar, Artane Siad, and Ashwin Swaminathan, we develop a new method for counting integral orbits having bounded invariants and satisfying congruence conditions that lie inside the cusps of fundamental domains for coregular representations — i.e., representations of semisimple groups for which the ring of invariants is a polynomial ring. During this talk, we will illustrate this method in the case of counting 3-torsion elements in class groups of quadratic orders, and time permitting, we will discuss the new applications of these methods, including to counting 2-torsion ideal classes of monogenized degree- n orders.