

Speaker: Peter Whang

Title: Diophantine analysis of surface maps

Abstract: A fundamental theorem of Borel–Harish-Chandra is finiteness of class number (i.e. number of integral orbits) for linear arithmetic group actions on affine homogeneous varieties. In this talk, we present a nonlinear analogue for certain equivalence classes of surface maps into negatively curved manifolds, and discuss its effectivity. We show a number of concrete Diophantine applications, including: (i) a finiteness theorem reminiscent of Birch-Merriman for pairs of elements in rank 1 arithmetic groups, (ii) computability of commutator length in rank 1 arithmetic groups, (iii) effective finite generation of integral points on SL_2 -character varieties of surfaces, and (iv) a composition law among the equivalence classes of surface maps.