

Yitwah Cheung, Prescriptions for a diagonal flow on the space of lattices.

Given a lattice in R^{d+1} , we consider the possibilities for the evolution of the $(d + 1)$ -tuple of successive minima under the action of the one-parameter subgroup $diag(e^t, \dots, e^t, e^{-dt})$. In particular, for orbits that are divergent, there is a notion of a "limit set" that is independent of choice of norm, and we are interested in the possibilities for this set. In joint work with Barak Weiss, we introduce the notion of a "prescription" which is a $(d + 1)$ -tuple of piecewise linear functions representing an idealized behavior of the logarithms of the successive minima, which under certain separation conditions we show is realized up bounded error by the evolution of the successive minima of an actual lattice. Our work may be thought as a refinement of a recent result of Damien Roy. As an application, we construct arbitrarily slowly divergent trajectories satisfying a conjecture of Schmidt proved by Moshchevitin in 2008.