Abstract:

We discuss the orbits of the horocycle flow acting on $SL(2,\mathbb{R})/\Gamma$ when sampled at sparse subsets of the integers. We will focus on the case of polynomial (sub-quadratic) times and also at numbers which are products of at most two prime numbers. We will show that for every $\delta > 0$, the orbit $\{h_{n^{2-\delta}}x\}$ is dense for every non-periodic point $x \in SL(2,\mathbb{R})/SL(2,\mathbb{Z})$ (joint work with M. Radziwill). We will also show that if Γ is arithmetic, then $\{h_{p\cdot q}x\}_{p,q-\text{primes}}$ equidistributes towards the only invariant measure on the regular orbit when sampled over $\mathbb{Z}$ (joint with G. Forni, M. Lemanczyk, M. Radziwill).