RATIONAL CUSPS → AN ACTUAL FINITE PREFIX

Primary index $x = \lambda^3\mu \equiv 1 \pmod 3$ → rational translates

I EXACT SOURCE GEOMETRY

raw finite κ

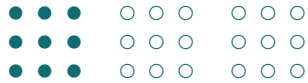
ν fixed, finite order

Jacobi ρ is not finite

$a = A/C$

$NC \ll_{\text{fixed}} R$

27 integral cusp states



9 with a constant term

18 with zero constant term

angular Mellin

$\ell = \pm 1$

$\Lambda_a(s,\ell) = u_{a,\ell}(NC)^{1-2s}\Lambda_{j,-D/C}(1-s,-\ell)$

$u_{a,\ell} = \chi(\delta_a)(-1)^{|\ell|}(C/\bar{C})^{\ell}$

coarse $R^{3/2}$ $\longrightarrow$ **sharp** $H(3/4, 3/8)$

$\ell = 0$: retain residues at $1/6$ and $5/6$.

II WHOLE ELEVEN-FACTOR PARTITION

$B_U = \mu A_U = \sum_{\substack{abc=m \\ Na,Nb \le U}} \mu(c)$

$Nm > U$

$B_U \neq C_U$

a	b	m_1	m_2	m_3	m_4	m_5	v_1	v_2	v_3	v_4

$Na, Nb \le U$ — 5 truncated μ factors — 4 free factors

classify fixed scales (schematic $J = 5$ slots)

balanced subset

$D^{1/3}$

one free long v; $m = pv$

$Np > Z$: $D^{1/3} + \sqrt{D/Z}$

$Np \le Z$: $D^{1/4}(Nk)^{3/8}Z^{5/8}$

freeze n first; prefix zeros stay outside Q

$Q = \text{rad}_{\text{good}}(pnksw)$; all original finite k retained

positive bound only: $\sum_k (Nk)^{-13/8+\epsilon} < \infty$

$Z = D^{2/9}$: $\sqrt{D/Z} = D^{1/4}Z^{5/8} = D^{7/18}$

normalized $P_X[A_U, A_U]$

$A_1 \asymp H = D^{3/4}$; $X = D^{3/8}$

margin $7/144$; fixed W seminorms

PURE FINITE TOP PREFIX

$D^{101/144+\epsilon}$

OPEN: frequency complement; other sectors; GRH