CORRECTION TO “L^∞-NORMS OF EIGENFUNCTIONS FOR ARITHMETIC HYPERBOLIC 3-MANIFOLDS,” DUKE MATH. J. 77 (1995), 799–817

SHIN-YA KOYAMA

The paper “L^∞-norms of eigenfunctions for arithmetic hyperbolic 3-manifolds,” published in Duke Math. J., vol. 77 (1995), no. 3, 799–817, contained two errors. First, Proposition 3.1, as well as its proof, should be corrected as follows.

We follow the modification done in [3]. We first have to supply the factor r_j^ε in Lemma 3.2. The corrected statement is as follows.

LEMMA 3.2′
Under the normalization $\|\phi_j\|_2 = 1$, we have

$$\sum_{|n|<N} \left|c_j(n)\right|^2 \ll e^{\pi r_j}\Big(r_j + \frac{N^2}{r_j}\Big) r_j^\varepsilon.$$

Then Proposition 3.1 is replaced by the following.

PROPOSITION 3.1′
Let ϕ_j be a cusp form as above with Laplace eigenvalue $\lambda_j = 1 + r_j^2$. Then

$$\left|\phi_j(v)\right| \ll r_j^\varepsilon\Big(\frac{r_j}{y} + \frac{r_j^{1/2}}{y^{1/3}}\Big)\|\phi_j\|_2.$$

Proof
We estimate the Fourier series (3.1):

$$\phi_j(v) = \sum_{n\in O} c_j(n) y K_{ir_j}\big(2\pi|n|y\big) e\big(\langle n, x\rangle\big).$$

We use the well-known bounds [1, 7.13.2(18)–(19), and 7.13.1(7)] that

$$K_{ir}\big(2\pi|n|y\big) \ll \left|\big(2\pi|n|y\big)^2 - r^2\right|^{-\frac{1}{4}} e^{-\frac{\pi}{2}r}, \tag{A}$$

$$K_{ir}\big(2\pi|n|y\big) \ll r^{-\frac{1}{3}} e^{-\frac{\pi}{2}r}, \tag{B}$$

$$K_{ir}\big(2\pi|n|y\big) \ll \big(2\pi|n|y\big)^{-\frac{1}{2}} e^{-2\pi|n|y}. \tag{C}$$

DUKE MATHEMATICAL JOURNAL
Vol. 165, No. 2, © 2016 DOI 10.1215/00127094-3481590
Received 4 February 2015. Revision received 24 November 2015.