CORRECTION TO "PAIR CORRELATION DENSITIES OF INHOMOGENEOUS QUADRATIC FORMS, II"

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The set $C \subset \mathbb{T}^k$ in [1, Th. 1.7] is wrongly characterized as a set of second Baire category since we explicitly restrict C to Diophantine vectors of type $(k-1)/(k-2)$. C is instead only a dense subset in $\mathbb{T}^k$. The correct statement of [1, Th. 1.7] is as follows.

THEOREM 1.7
Let $k > 2$. For any $a > 0$, there exists a dense set $C \subset \mathbb{T}^k$ for which the following hold.

(i) *All $\boldsymbol{\alpha} \in C$ are Diophantine of type $\kappa = (k-1)/(k-2)$, and the components of the vector $(\boldsymbol{\alpha}, 1) \in \mathbb{R}^{k+1}$ are linearly independent over $\mathbb{Q}$.*

(ii) *For $\boldsymbol{\alpha} \in C$, we find arbitrarily large X such that*

$$R_2[-a, a](X) \geq \frac{\log X}{\log \log \log X}.$$

(iii) *For $\boldsymbol{\alpha} \in C$, there exists an infinite sequence $L_1 < L_2 < \cdots \to \infty$ such that*

$$\lim_{j \to \infty} R_2[-a, a](L_j) = 2\pi a.$$

Proof
One follows the argument in [1, pp. 432–433] (cf. also [2, Sec. 9]) to show that for each fixed badly approximable $(k-2)$-tuple $(\alpha_1, \ldots, \alpha_{k-2})$ there is a set of second Baire category of $(\alpha_{k-1}, \alpha_k) \in \mathbb{T}^2$ such that conditions (i), (ii), and (iii) of Theorem 1.7 hold for $\boldsymbol{\alpha} = (\alpha_1, \ldots, \alpha_k)$. Because the set of badly approximable $(k-2)$-tuples is dense in $\mathbb{T}^{k-2}$, and the set of second Baire category of (α_{k-1}, α_k) is dense in $\mathbb{T}^2$, the set C of $\boldsymbol{\alpha}$ satisfying conditions (i), (ii), and (iii) of Theorem 1.7 is dense in $\mathbb{T}^k$. $\square$

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References

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