Rev. Mat. Iberoamericana **21** (2005), no. 2, 689–692

Corrigenda: $(n,2)$-sets have full Hausdorff dimension

Rev. Mat. Iberoamericana **20** (2004), no. 2, 381–393.

Themis Mitsis

1. Introduction

In [1] the author claimed that an $(n,2)$-set must have full Hausdorff dimension. However, as pointed out by Terence Tao and John Bueti, the proof contains an error. More precisely, on page 389, the argument doesn't really show that $P_k^\delta \subset \Pi_i^{\widetilde{C}\delta}$. In this note we outline how one can correct this, by constructing families of plates so that their intersections with a given one contain line segments of fixed length. The price we pay is a weaker result. Namely, we show that the Hausdorff dimension of an $(n,2)$-set is at least $(2n+3)/3$, which is, nevertheless, an improvement on the previously known $(2n+2)/3$.

As in [1], the Hausdorff dimension bound is a consequence of the following which should replace Proposition 4.1 in [1]

Proposition 1.1 *Suppose E is a set in $\mathbb{R}^n$, $\lambda \le 1$ and $\mathcal{B} = \{P_j\}_{j=1}^M$ is a δ-separated set in $\mathcal{G}_n$ with diam$(\mathcal{B}) \le 1/2$, such that for each j there is a plate P_j^δ satisfying*

$$|P_j^\delta \cap E| \ge \lambda |P_j^\delta|.$$

Then

$$|E| \ge C_\epsilon^{-1}\delta^\epsilon \lambda^\alpha M^{(2n-3)/(6(n-2))}\delta^{n-2},$$

where α is a positive constant depending on n.

2. Preliminaries

Our terminology and notation are the same as in [1]. The only difference is that $P^{l,\delta}$ denotes a plate of dimensions $l \times l \times \delta \times \cdots \times \delta$, $1 \le l \le 4$, $0 < \delta \ll 1$. Also, when we write $x \gtrapprox_\delta y$ we mean $x \gtrsim |\log\delta|^{-\alpha} y$, for some positive α. As is customary, C denotes positive constants not necessarily the same each time they occur.