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by Carolyn S. GORDON & Juan Pablo ROSSETTI

Abstract. — We correct errors concerning the question of whether orbifolds and manifolds can be distinguished by their spectra.

Résumé. — Nous corrigeons certaines erreurs concernant la question de savoir si les orbifolds et les variétés peuvent être distingués au moyen de leurs spectres.

(i). — Two compact Riemannian manifolds or orbifolds are said to be *p-isospectral* if their Hodge Laplacians acting on p-forms have the same spectrum. Let $\mathcal{O}$ be the orbifold given by the quotient of the torus $T = \mathbb{Z}^2\backslash\mathbb{R}^2$ by the involution ρ induced from the map $-\operatorname{Id}$ of $\mathbb{R}^2$. Theorem 3.1 of [2] asserts that $\mathcal{O}$ is 1-isospectral to a cylinder, a Klein bottle and a Möbius strip. As shown in the proof of Theorem 3.1, the 1-spectrum of each of the latter three surfaces coincides with the 0-spectrum of T, while the 1-spectrum of $\mathcal{O}$ consists of two copies of the spectrum of the Laplacian Δ_T of T acting on the space of ρ-anti-invariant smooth functions on T. The error is in the statement that the spectra of Δ_T on the space of ρ anti-invariant functions and the space of ρ-invariant functions coincide. They in fact differ by the presence of the zero eigenvalue in the latter. Thus the 1-spectrum of the orbifold differs from that of the three surfaces precisely by the absence of the zero eigenvalue.

The analogous error appears in the Remark following Theorem 3.2.

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All other examples in [2] of $2m$-dimensional orbifolds that are m-isospectral to manifolds, in particular the examples in Theorem 3.2, remain valid. As an aside, we note that one can enlarge the collection of manifolds and orbifolds that are m-isospectral to those in Theorem 3.2(i) by taking the quotient of $\mathbf{Z}^{2m}\backslash\mathbf{R}^{2m}$ by any of the involutions $\tau_k \circ L_b$, where τ_k is defined as in the proof of the theorem and L_b is translation by an element of $(\frac{1}{2}\mathbf{Z})^{2m}$ not in $\mathbf{Z}^{2m}$.

(ii). — In the statement of Proposition 3.4 (i), "strata" should be replaced by "primary stratum". See [1] for the definition of "primary" and further explanation. Proposition 3.4 (ii) should read: If N is a manifold such that $\mathcal{O}$ and N have a common finite Riemannian cover, then N and $\mathcal{O}$ cannot be isospectral. The statement and proof also remain valid in the case of a common infinite cover that is a Riemannian homogeneous space; indeed homogeneity implies that the integrands yielding the invariants a_k are constants depending only on the geometry of the cover in a neighborhood of an arbitrary point.

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