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Integral Equations and Operator Theory

Erratum

Erratum to: Group Representations with Empty Residual Spectrum

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Erratum to: Integr. Equ. Oper. Theory 67 (2010), 95–107 DOI 10.1007/s00020-010-1772-0

We regret to announce that, due to a careless mistake by the author regarding terminology, the article [1] inadvertently claims stronger results than are actually proved. The error lies in mistaking the *residual spectrum* $\sigma_r(T)$ of an operator T—which is, by definition, the set of λ such that $T - \lambda I$ has non-dense range—for $\sigma(T)\setminus\sigma_{ap}(T)$, where $\sigma_{ap}(T)$ is the set of *approximate eigenvalues* of T. See, for instance, [2, §1.2 and §4.6] for the definitions and basic properties.

It is the set $\sigma\setminus\sigma_{ap}$ which is studied in the article, rather than σ_r. The following corrections to pages 95–97 of the article are therefore necessary.

(i) A more accurate title for the article would be "Group representations where the spectrum consists of approximate eigenvalues". Similarly, in lines 3–4 of the abstract, "has empty residual spectrum" should be replaced with "has spectrum consisting of approximate eigenvalues".

(ii) The second paragraph of Section 1, and the question which follows it, should be replaced with the following:

> In particular, we might consider the *approximate point spectrum* of such an operator. In many cases this coincides with the whole of the spectrum, motivating the following question: given Γ and X as above, does *every* $a \in \mathbb{C}\Gamma$, when regarded as an operator on X, have spectrum consisting entirely of approximate eigenvalues?

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(iii) While Theorem 1.1 is correctly quoted, the claim that decomposable operators have empty residual spectrum (which appears at the top of p. 96) is in general false, and should be removed. The correct claim, which as stated in the original can be found as [2, Proposition 1.3.3], is that $\sigma(T) = \sigma_{ap}(T)$ for every decomposable operator.[1]

(iv) On p. 96, the definition of surjunctive pair should be modified in order to restore the *intended* meaning, as follows: if X is a Banach space and $A \subseteq \mathcal{B}(X)$ is an algebra of operators on it, not necessarily closed, we say (A, X) is a *surjunctive pair* if $\sigma(a)$ consists entirely of approximate eigenvalues for each $a \in A$. (This is in fact the definition/characterization used throughout the article, via Lemma 2.1.)

(v) The second paragraph of Section 2, which contains an erroneous definition of the residual spectrum, should be removed.

With these amendments, all the results claimed in the article are now correct. The author apologizes for any confusion that may have arisen.

References

[1] Choi, Y.: Group representations with empty residual spectrum. Integr. Equ. Oper. Theory **67**(1), 95–107 (2010)

[2] Laursen, K.B., Neumann, M.M.: An Introduction to Local Spectral Theory. London Mathematical Society Monographs. New Series, vol. 20. The Clarendon Press. Oxford University Press, New York (2000)

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[1] For example, the multiplication operator $M : C[0, 1] \to C[0, 1]$ defined by $(Mf)(t) = tf(t)$ is decomposable, and satisfies $\sigma(M) = \sigma_r(M) = \sigma_{ap}(M)$: see the discussion on p. 369 of [2].