

# *Erratum: Toward a Spectral Characterization of the Set of Norm Limits of Nilpotent Operators, Vol. 24 (1975), 847-864*

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There is a mistake in the proof of Lemma 4 (The modification  $M \dot{+} T'' \rightarrow N \dot{+} T''$ , in the last three lines of that proof, can actually have a large norm, even if  $\|M - N\|$  is small) and the author was unable to obtain a fair proof of that fact. Unfortunately, this invalidates the proofs of several results along the paper, including the affirmative answer to Problem 7 of [1].

However, the following weaker version of Lemma 4 is actually true (By the good part of the proof given there).

**Lemma 4'.** *Let  $T \in \mathcal{L}(\mathfrak{H})$  and let  $\epsilon > 0$  be given. Then there exists  $T' \in \mathcal{L}(\mathfrak{H})$  such that  $\|T - T'\| < \epsilon$  and  $T' \approx N \dot{+} T''$ , where  $\sigma(T'') \subset \sigma(T)$ ,  $E(T'') = E(T)$ ,  $N$  is a diagonal operator whose diagonal entries are repeated infinitely many times,  $\sigma(N) = E(N)$  is disjoint from  $\sigma(T'')$  and  $d_H[E(N), \partial\omega(T)] < \epsilon$  ( $d_H$  denotes the Hausdorff distance). Furthermore, if  $T$  is quasitriangular ( $T \in \mathcal{QT}^*$ ,  $T \in \mathcal{QT} \cap \mathcal{QT}^*$ , resp.), then  $T'$  and  $T''$  have the same property.*

This weaker form is enough to prove

**Theorem 7.**  $\mathcal{L}(\mathfrak{H})$  is the set of norm limits of operators of the form  $Q_1 + Q_2$ , where  $Q_1, Q_2 \in \mathbf{N}$ .

The only modification to the proof given in [2] is this: instead of  $|\lambda| \leq \text{sp}(T)$ , take  $|\lambda| \leq \text{sp}(T) + \epsilon/2$  and  $\lambda \notin \sigma(L)$ .

## REFERENCE

1. P. R. HALMOS, *Ten problems in Hilbert space*, Bull. Amer. Math. Soc. **76** (1970), 887-933.
2. D. A. HERRERO, *Toward a spectral characterization of the set of norm limits of nilpotent operators*, Indiana Univ. Math. J. **24** (1975), 847-864.

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