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A MODIFIED PROJECTION METHOD FOR EQUATIONS OF THE SECOND KIND: CORRIGENDUM AND ADDENDUM

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The author would like to correct an error in the statement of a result [in Bull. Aust. Math. Soc. 36 (1987) 485–492] and also to incorporate an additional result.

In Theorem 2.2(3) it is stated that if T is a compact self adjoint operator on a Hilbert space and π_n's are orthogonal projections, then the Kantorovich approximation x_n^K, Sloan approximation x_n^S and the modified projection approximation x_n^M are of the same order. That this is not correct was pointed out to the author by Professor I.H. Sloan. The correct statement is the following:

THEOREM 2.2.(3). *If T is a compact self adjoint operator, then the orders of convergence of x_n^K, s_n^S and x_n^M are at least $\varepsilon_n = \min\{\|R_n^K\|, \|R_n^S\|\}$, where $R_n^A x = x - x_n^A$, $A \in \{K, S\}$, that is, there exists a constant $c > 0$ such that*

$$\|x - x_n^K\| \leqslant c\,\varepsilon_n, \ \|x - x_n^S\| \leqslant c\,\varepsilon_n \text{ and } \|x - x_n^M\| \leqslant c\,\varepsilon_n.$$

From the definition x_n^K and x_n^M we note that

$$(1 - \pi_n T)(x - x_n^K) = (1 - \pi_n)Tx = (1 - \pi_n)(x - x_n^K) = (1 - \pi_n)(x - x_n^M),$$

so that along with Theorem 2.1, we obtain:

THEOREM. *There exist positive constants c_1 and c_2 such that*

$$c_1 \|x - x_n^K\| \leqslant \|x - x_n^M\| \leqslant c_2 \max\{\|x - x_n^K\|, \|x - x_n^S\|\}.$$

Thus whenever x_n^S is better than x_n^K, x_n^M and x_n^K have the same order of convergence.

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