# CORRIGENDUM

I. Babuška and J. E. Osborn, *Finite element-Galerkin approximation of the eigenvalues and eigenvectors of selfadjoint problems*, Math. Comp. **52** (1989), 275–297.

We are grateful to Christopher A. Beattie for pointing out an error in the proof of Lemma 3.5, and for a suggestion regarding a correct proof.

With $E_h(\lambda_{k_i})$ defined (on the bottom of p. 281) as the orthogonal projection of $H_B$ onto $M(\lambda_{k_i})$, formula (3.17b) is incorrect. It should be replaced by

$$E_h(\lambda_{k_i}) = \frac{1}{2\pi i}\int_{\Gamma_{k_i}} (z - \overline{T}_h)^{-1}\,dz, \tag{3.17b}$$

where $\overline{T}_h = P_h T P_h$ (as defined on p. 283).

It is easily seen that

$$\begin{aligned}\|u - E_h u\|_B &= \|(I - P_h)u + P_h(E - E_h)u\|_B \\ &\le \|(I - P_h)u\|_B + \|P_h(E - E_h)u\|_B \quad \forall u \in M(\lambda_{k_i}).\end{aligned} \tag{3.18a}$$

Using (3.17a,b) and the relation $P_h(z - \overline{T}_h)^{-1} = (z - T_h)^{-1}P_h$, we have (3.18b)

$$\begin{aligned}\|P_h(E - E_h)u\|_B &= \left\|\frac{1}{2\pi i}\int_{\Gamma_{k_i}} P_h[(z - T)^{-1} - (z - \overline{T}_h)^{-1}]u\,dz\right\|_B \\ &= \frac{1}{2\pi}\left\|\int_{\Gamma_{k_i}} P_h(z - \overline{T}_h)^{-1}(T - \overline{T}_h)(z - T)^{-1}u\,dz\right\|_B \\ &= \frac{1}{2\pi}\left\|\int_{\Gamma_{k_i}} (z - T_h)^{-1}T_h\frac{(I - P_h)u}{z - \mu_{k_i}}\,dz\right\|_B \\ &\le \frac{1}{2\pi}[2\pi\,\mathrm{rad}(\Gamma_{k_i})]\sup_{\substack{z\in\Gamma_{k_i}\\ 0<h}}(\|(z - T_h)^{-1}\|_{H_B\to H_B}\|T_h\|_{H_B\to H_B})\frac{\|(I - P_h)u\|_B}{\mathrm{rad}(\Gamma_{k_i})} \\ &= \sup_{\substack{z\in\Gamma_{k_i}\\ 0<h}}(\|(z - T_h)^{-1}\|_{H_B\to H_B}\|T_h\|_{H_B\to H_B})\|(I - P_h)u\|_B \quad \forall u \in M(\Gamma_{k_i}).\end{aligned}$$

Since $\|T - T_h\|_{H_B\to H_B} \to 0$, we see that

$$\widetilde{C}_i = \sup_{\substack{z\in\Gamma_{k_i}\\ 0<h}}(\|(z - T_h)^{-1}\|_{H_B\to H_B}\|T_h\|_{H_B\to H_B}) < \infty.$$

Thus, from (3.18a,b) we obtain (3.16a) with $C_i = 1 + \widetilde{C}_i$.

Now consider the proof of (3.16b). Since we also have $\|T - T_h\|_{H_D \to H_D} \to 0$, we easily see that a slight modification of estimates (3.18a,b) establishes (3.16b) with

$$C_i = 1 + \sup_{\substack{z \in \Gamma_{k_i} \\ 0 < h}} (\|(z - T_h)^{-1}\|_{H_D \to H_D} \|T_h\|_{H_D \to H_D}) .$$

The proof of (3.16c) is similar.

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