

## 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

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

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

It is easily seen that

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

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

$$(3.18b) \quad \begin{aligned} \|P_h(E - E_h)u\|_B &= \left\| \frac{1}{2\pi i} \int_{\Gamma_{k_i}} P_h[(z - T)^{-1} - (z - \bar{T}_h)^{-1}]u dz \right\|_B \\ &= \frac{1}{2\pi} \left\| \int_{\Gamma_{k_i}} P_h(z - \bar{T}_h)^{-1}(T - \bar{T}_h)(z - T)^{-1}u dz \right\|_B \\ &= \frac{1}{2\pi} \left\| \int_{\Gamma_{k_i}} (z - T_h)^{-1} T_h \frac{(I - P_h)u}{z - \mu_{k_i}} dz \right\|_B \\ &\leq \frac{1}{2\pi} [2\pi \operatorname{rad}(\Gamma_{k_i})] \sup_{\substack{z \in \Gamma_{k_i} \\ 0 < h}} (\|(z - T_h)^{-1}\|_{H_B \rightarrow H_B} \|T_h\|_{H_B \rightarrow H_B}) \frac{\|(I - P_h)u\|_B}{\operatorname{rad}(\Gamma_{k_i})} \\ &= \sup_{\substack{z \in \Gamma_{k_i} \\ 0 < h}} (\|(z - T_h)^{-1}\|_{H_B \rightarrow H_B} \|T_h\|_{H_B \rightarrow H_B}) \|(I - P_h)u\|_B \quad \forall u \in M(\Gamma_{k_i}). \end{aligned}$$

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

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

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

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

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

The proof of (3.16c) is similar.

I. BABUŠKA  
J. E. OSBORN