

Errata List

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Page 10: Fig 1.3. on page 10 and Fig 1.4. on page 11. In the text the electromagnetic properties for the surrounding medium are $\epsilon_r \neq 1$ or $\mu_r \neq 1$. In the captions we say $\epsilon_r \neq 1$ or $\mu_r = 1$! The text is correct.

Page 13: The equation for the cavity resonator in Section 1.4.2 should read

$$\nabla \times (\mu_r^{-1} \nabla \times \mathbf{E}) - \dots$$

Page 20: In the Lax-Milgram lemma, the constant C can be chosen 1.

Page 22, Theorem 2.25: The arguments of b in (2.8a) and (2.8b) need to be reversed. So the general mixed problem should be

$$\begin{aligned} a(u, \phi) + b(p, \phi) &= f(\phi) \text{ for all } \phi \in \mathcal{X} \\ b(\xi, u) &= g(\xi) \text{ for all } \xi \in \mathcal{S} \end{aligned}$$

In addition f and g are conjugate-linear (not linear) functionals (see also Lemma 2.37).

These changes propagates throughout Chapter 2 (e.g. (2.11))

Page 55: Equation (3.41) should read

$$\|\mathbf{v}\|_{H(\text{curl}; \Omega)} = \left(\|\mathbf{v}\|_{(L^2(\Omega))^3}^2 + \|\nabla \times \mathbf{v}\|_{(L^2(\Omega))^3}^2 \right)^{1/2}.$$

Page 67, before (3.61): “Then obviously $\nabla \Theta_0 \subset K_N(\Omega)$ and we” should be replaced by “Then we” (the inclusion obviously doesn’t hold).

Page 85 (also noted by Professor Nigam) In Theorem 4.3 equation (4.6) the definition of S should read

$$S = \left\{ p \in H^1(\Omega) \mid p = 0 \text{ on } \Gamma \text{ and } p \text{ is constant on } \Sigma \right\}. \quad (4.6)$$

Page 89 In equation (4.14) should read

$$a_+(\mathbf{u}, \mathbf{v}) = (\mu_r^{-1} \nabla \times \mathbf{u}, \nabla \times \mathbf{v}) + \kappa^2 (\epsilon_r \mathbf{u}, \mathbf{v}) + i \langle \lambda \mathbf{u}_T, \mathbf{v}_T \rangle.$$

Page 93: Proof of Theorem 4.13

- At the start of the proof, $\nabla \times \mathbf{v} = i\kappa\epsilon_r\mathbf{u}$ should read

$$\nabla \times \mathbf{v} = -i\kappa\epsilon_r\mathbf{u}.$$

- Still in the same proof the displayed equation should read:

$$\Delta\mathbf{v} = \epsilon_r \left[(\nabla_r^{-1}) \times \nabla \times \mathbf{v} - \kappa^2 \mu_r \mathbf{v} \right].$$

Page 102, line 10: “chose” should be “choose”.

Page 116: Definition 5.11: The condition for regularity should read that

$$\sigma_h \leq \sigma_{max} < \infty \text{ for all } h \text{ with } 0 < h \leq h_0$$

Page 121: In the 1st line of the proof of Lemma 5.17 $\hat{q} \in \tilde{P}_k$ should read $\hat{q} \in \tilde{P}_{k-1}$.

Page 123, line 7: “homogeneous of degree k ” should read “homogeneous of degree $k - 1$ ”

Page 128: In the proof of Lemma 5.27 $p = (k + 2)\mathbf{x} \cdot \nabla p$ should read $p = (k + 1)^{-1}\mathbf{x} \cdot \nabla p$.

Page 128: In the proof of Lemma 5.28, $\mathbf{x} \cdot \nabla p_2 = kp_2$ should read $\mathbf{x} \cdot \nabla p_2 = (k + 1)p_2$.

Page 131: Three lines from the bottom $\hat{\tau}$ should τ .

Page 133: In the 4th line it suffices that $\hat{q} \in P_{k-2}(\hat{f})$

Page 162, equation (6.14): “ $d\hat{A}$ ” should be “ $d\hat{V}$ ”

Page 188, line 6: The equation for \mathbf{g} should be

$$\mathbf{g} = (\nabla \times \mathbf{E}^i) \times \mathbf{n} - i\kappa\mathbf{E}_T^i.$$

Page 217, last line of Section 8.3: “axis” should be “axes”.

Page 280, end of first paragraph: Reference [90] should be [188].

Page 328, line before (12.56): “scatter” should be “scatterer”.

Page 431, reference [60 :] “Theorey” should be “theory”

Page 433: Reference [90] was published in the *SIAM Journal on Scientific Computing*

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