

## Complementary errata to the book “Applied numerical linear algebra” by James W. Demmel

**p. 23, prop. 13** Should read  $\|A\|_2 \leq \|A\|_F \leq n^{1/2}\|A\|_2$  (“error” also in the on-line errata)

**p. 110, Proof Th. 3.2** The property of decreasing singular values is missing from the proof.

**p. 126, l. 1** Only square matrices can be singular.

**p. 147, l. 4** The expression  $P^* A_{22} P = \tilde{T}$  should be  $P^* \tilde{A}_{22} P = \tilde{T}$ .

**p. 147, l. -9**  $\text{span}\{u_R, u_I\} = \text{span}\{u, \bar{u}\}$  is not correct. Proof invariant:

$$\begin{aligned}\lambda u &= (\lambda_R + i \lambda_I)(u_R + i u_I) \\ &= (\lambda_R u_R - \lambda_I u_I) + i(\lambda_R u_I + \lambda_I u_R)\end{aligned}$$

Therefore

$$\begin{aligned}A u_R &= \frac{1}{2}(A u + A \bar{u}) = \frac{1}{2}(\lambda u + \bar{\lambda} \bar{u}) = \text{Re}(\lambda u) = \lambda_R u_R - \lambda_I u_I \\ A u_I &= \frac{1}{2i}(A u - A \bar{u}) = \frac{1}{2i}(\lambda u - \bar{\lambda} \bar{u}) = \text{Im}(\lambda u) = \lambda_R u_I + \lambda_I u_R\end{aligned}$$

so  $\text{span}\{u_R, u_I\}$  is an invariant subspace.

**p. 165, l. -3** Change  $i : n$  to  $1 : n$  in two places.

**p. 213, l. 14 & 16**  $6n$  and  $6n^2$  must be wrong.

**p. 306, l. 14** Change  $\|r\|_{A^{-1}}$  to  $\|r\|_{A^{-1}}$ .