

**CORRIGENDUM TO
“ON COMPUTING QUADRATURE-BASED BOUNDS FOR THE
A-NORM OF THE ERROR IN CONJUGATE GRADIENTS”
[NUMER. ALGORITHMS, 62 (2013), 163–191]**

GÉRARD MEURANT[†] AND PETR TICHÝ[‡]

Abstract. In our paper [Numer. Algorithms, 62 (2013), pp. 163–191] we found two typographical errors that can negatively influence the correct implementation of the algorithms by potential users. Therefore, we consider important to present this corrigendum.

Key words. Conjugate Gradients, norm of the error, bounds for the error norm.

AMS subject classifications. 15A06, 65F10.

1. The algorithm CGQL. The first typographical error in [1] appears in the main part of Algorithm 5 CGQL (surrounded by the frame) on page 185. To be consistent with the definition of g_k on page 182, the symbol g_k that appears only once in the main part of Algorithm 5 CGQL, should be replaced by g_{k-1} . Hence,

$$g_{k-1} = \|r_0\|^2 \frac{c_k^2}{d_k}$$

is the correct formula.

2. The Estimates part. The second typographical error is closely related with the first one and it is hidden in the “Estimates part” on page 184, that is common for both algorithms, CGQL and CGQ. It is again about wrong indexing of g_k , this time in the definition of $Q_{k-d,d}$. The corrected text on page 184 is the following: If $k \geq d$, then compute

$$Q_{k-d,d} = \sum_{j=k-d}^{k-1} g_j.$$

3. Final comments. We would like to assure the interested readers that these typographical errors did not appear in our Matlab codes so that the numerical experiments presented in our paper are correct. As it is clear from the above text, the first error arose in the CGQL algorithm where the CG related quantities are indexed from 0 while the tridiagonal matrices related quantities are indexed from 1. The first typographical error caused then the second one in the Estimates part.

REFERENCES

- [1] G. MEURANT AND P. TICHÝ, *On computing quadrature-based bounds for the A-norm of the error in conjugate gradients*, Numer. Algorithms, 62 (2013), pp. 163–191.

[†]30 rue du sergent Bauchat, 75012 Paris, France, email: gerard.meurant@gmail.com

[‡]Institute of Computer Science, Academy of Sciences of the Czech Republic, Pod Vodárenskou věží 2, 18207 Prague, Czech Republic, email: tichy@cs.cas.cz

*This work was supported by the Grant Agency of the Czech Republic under grant No. P201/13-06684 S, and by the project M100301201 of the institutional support of the Academy of Sciences of the Czech Republic.