Erratum to: On Gauss-type quadrature formulas with prescribed nodes anywhere on the real line

Adhemar Bultheel[a,*], Ruymán Cruz-Barroso[b], Marc Van Barel[a,1]

[a] *Department of Computer Science, KU Leuven, Celestijnenlaan 200 A, B-3001 Heverlee (Leuven), Belgium.*
[b] *Department of Mathematical Analysis, Un. La Laguna, La Laguna, Tenerife, Spain.*

Abstract

This is an erratum to our previous paper in this journal.

In the paper we investigated among other things the existence of Gauss-type quadrature formulas with two prescribed nodes and a maximal domain of exactness. At some instances we claimed that the weights in the quadrature formulas are positive, while this only holds under more restrictive conditions than given. These are the corrections that have to be implemented.

1. In the discussion before Theorem 2.15, the case GL3c should be completed with the following additional information.

   $T(b) = f_n(b)$ iff a is a node of the quadrature and $T(a) = f_n(a)$ iff b is a node. If all the nodes are in (a, b) the corresponding weights will be positive. If a or b is one of the nodes, then the corresponding weight cannot be guaranteed to be positive.

2. The last sentence of Theorem 2.15 should be changed as follows.

   In all the cases where the Gauss-Lobatto quadrature rule exist, it must be of interpolatory type and the positivity of the weights for all the nodes inside (a, b) is guaranteed. The positivity of the weight corresponding to a node in one of the endpoints of the interval can not be guaranteed.

3. In Corollary 2.17, the sentence "The weights of the quadrature are positive" should be replaced by the following:

   The weights corresponding to the nodes different from a if $\tilde{\mu}(x) = (x - a)\mu(x)$ (respectively different from b if $\tilde{\mu}(x) = (b - x)\mu(x)$) are positive, but the weight for a (respectively b) can not be guaranteed to be positive.

More details about conditions that guarantee that all the weights are positive are provided in [1].

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References

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*Corresponding author.
Email addresses: Adhemar.Bultheel@cs.kuleuven.be (Adhemar Bultheel), rcruzb@ull.es (Ruymán Cruz-Barroso), marc.vanbarel@cs.kuleuven.be (Marc Van Barel)

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