APPROXIMATION AND COMPUTATION
THEORY AND APPLICATIONS (ACTA 2017)

Dedicated to Professor Walter Gautschi on the Occasion of his 90th Anniversary

АПРОКСИМАЦИЈЕ И ИЗРАЧУНАВАЊА
ТЕОРИЈА И ПРИМЕНЕ

Поводом деведесетог рођендана професора Волтера Гаучија

SERBIAN ACADEMY OF SCIENCES AND ARTS,
Belgrade, Knez Mihailova 35,
November 30 – December 2, 2017
СРПСКА АКАДЕМИЈА НАУКА И УМЕТНОСТИ,
Кнез Михаилова 35, Београд
30. новембар – 2. децембар 2017. године

САНУ

ACTA 2017

Dušan Lj. Djukić[1], Lothar Reichel[2], and Miodrag M. Spalević[1]

[1] Department of Mathematics, Faculty of Mechanical Engineering,
University of Belgrade, Kraljice Marije 16
11000 Belgrade, Serbia
{ddjukic,mspalevic}@mas.bg.ac.rs
[2] Department of Mathematical Sciences, Kent State University,
Kent, OH 44242, USA
reichel@math.kent.edu

Abstract

Generalized averaged Gaussian quadrature formulas, introduced by Spalević [3], may yield a smaller error than Gauss quadrature rules. When moments or modified moments are difficult to compute. these formulas can serve as good substitutes. However, generalized averaged Gaussian quadrature formulas may have external nodes, i.e. nodes outside the convex hull of the measure corresponding to the Gauss rules. This would make them unusable when the domain of the integrand is limited to this convex hull. In this paper we investigate whether removing some of the last rows and columns of the matrices determining generalized averaged Gaussian quadrature rules (cf. [2]) will produce quadrature rules with no external nodes. The results that will be presented have been recently published in [1].

Keywords: Truncated averaged Gaussian quadratures, Internality

References

1. D.Lj. Djukić, L. Reichel, M.M. Spalević: Truncated generalized averaged Gauss quadrature rules. J. Comput. Appl. Math. 308 (2016), 408–418.
2. L. Reichel, M.M. Spalević, T. Tang: Generalized averaged Gauss quadrature rules for the approximation of matrix functionals. BIT Numer. Math. 56 (2016), 1045–1067.
3. M.M. Spalević: On generalized averaged Gaussian formulas. Math. Comp. 76 (2007), 1483–1492.