Anti-Gaussian quadrature rules related to orthogonality on the semicircle

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Let Γ be a unit semicircle $\Gamma = \{z = \mathrm{e}^{\mathrm{i}\theta} : 0 \leq \theta \leq \pi\}$. Orthogonal polynomials on the semicircle with respect to the complex-valued inner product

$$\langle f, g\rangle = \int_\Gamma f(z)g(z)(\mathrm{i}z)^{-1}\mathrm{d}z = \int_0^\pi f(\mathrm{e}^{\mathrm{i}\theta})g(\mathrm{e}^{\mathrm{i}\theta})\mathrm{d}\theta$$

was introduced by Gautschi and Milovanović in [1], were the certain basic properties were proved. Such orthogonality as well as the applications involving Gauss-Christoffel quadrature rules were further studied in [2] and [4]. In this article we introduce anti-Gaussian quadrature rules related to the orthogonality on the semicircle (see [3]) and present stable numerical method for their construction. Also, some numerical examples are included.

References

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