

On generalized averaged Gaussian formulas

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Recently, we proposed a new $(2\ell + 1)$ -point quadrature rule $\widehat{G}_{2\ell+1}$, referred to as a generalized averaged Gaussian quadrature rule. This rule has $2\ell + 1$ nodes and the nodes of the corresponding Gauss rule G_ℓ with ℓ nodes form a subset. This is similar to the situation for the $(2\ell + 1)$ -point Gauss-Kronrod rule $H_{2\ell+1}$ associated with G_ℓ . An attractive feature of the $\widehat{G}_{2\ell+1}$ is that it exists also when the $H_{2\ell+1}$ does not. The numerical construction, on the basis of recently proposed effective numerical procedures, of $\widehat{G}_{2\ell+1}$ is simpler than the construction of $H_{2\ell+1}$. A survey of these formulas and their applications will be presented.

References

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