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Constructive method for GAG trigonometric quadrature formulas

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ABSTRACT:

This paper presents a constructive approach for generating generalized averaged Gaussian (GAG) quadrature formulas on the space of trigonometric polynomials. The proposed method extends the concept of generalized averaged Gaussian quadrature rules developed for algebraic polynomials ([1]) and adapts it to the trigonometric setting. The construction is based on establishing a connections between the nodes and weights of trigonometric quadrature formulas and those of the associated quadrature rules defined on the space of algebraic polynomials. Particular attention is devoted to the case of even weight functions, for which the construction is considerably simpler. Numerical examples are provided to illustrate some of the most significant properties of GAG quadrature formulas.

Keywords: *quadrature formulas, orthogonal trigonometric polynomials, GAG quadrature rule, even weight function*

References:

[1] M. Spalević, On generalized averaged Gaussian formulas, Math. Comput. **76**(259), 2007, 1483-1492.