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POSITIVE RATIONAL INTERPOLATORY QUADRATURE RULES ON THE INTERVAL AND THE COMPLEX UNIT CIRCLE WITH PREASSIGNED NODES

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Abstract

We consider rational Gauss-type quadrature rules on the interval $[-1, 1]$ with one fixed node in $x_\alpha = \cos(\theta_\alpha) \in (-1, 1)$. The remaining nodes are then chosen inside the interval $[-1, 1]$ to achieve the maximal possible domain of validity in the space of rational functions, while maintaining positive weights. In this contribution we discuss the connection of these quadrature rules with rational Szegő-Lobatto quadrature rules on the complex unit circle with fixed nodes in $z_\alpha = e^{i\theta_\alpha}$ and $z_\beta = \overline{z}_\alpha$.

Keywords: Rational Gauss-type quadratures, rational Szegő-Lobatto quadratures.

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