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Positive quadrature formulas on the unit circle with prescribed nodes. A new approach

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In this talk we consider the approximation of integrals with respect to measures supported on $[-\pi, \pi]$ by means of positive quadrature formulas on the unit circle with maximal domain of exactness and possibly some preassigned nodes. The quadrature formulas are exact in a new nested sequence of subspaces of Laurent polynomials that brings better properties to the rules, collaborating thus to formalize an own theory that allow us to obtain analogous properties to the usual quadrature formulas on the real line. We guarantee the existence of two positive rules of maximal domain of exactness, and we characterize the existence of positive quadrature formulas that should have up to three nodes prescribed in advance. We obtain estimations of the error for these quadrature formulas, depending on the regularity of the integrand.

The content of this talk is a part of a joint work in progress in collaboration with Carlos Díaz Mendoza and Francisco Perdomo-Pío.

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