Fast variants of the Golub and Welsch algorithm for symmetric weight functions*

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3rd Dolomites Workshop on Constructive Approximation and Applications,
September 9–14, 2012

In this talk, we investigate some variants of the well-known Golub-Welsch algorithm for computing nodes and weights of Gaussian rules for symmetric weights w in intervals $(-a, a)$ (not necessarily bounded). The purpose is to reduce the complexity of the Jacobi eigenvalue problem stemming from Wilf theorem and show the effectiveness of these methods on three test problems. Whenever is possible, we compare our results with those using Glaser-Liu-Rokhlin approaches, exhibiting good performances for algebraic degree of exactness $\delta \leq 1000$.

*Work supported by the "ex-60%" funds and by the project "Interpolation and Extrapolation: new algorithms and applications" of the University of Padova, and by the INdAM GNCS.

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