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15. Numerical Analysis and Scientific Computing

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Another Approach to Quadrature Methods
Usually the quadrature error of a quadrature rule is estimated using the high order derivatives of the integrand. In this talk we present new approach to quadrature methods where any formula of numerical integration is generated by discontinouos function whose jumps are quadrature weights. The quadrature error is estimated for continuous and Lipschitz-continuous functions with the constant which can not be replaced by a smaller one. By means of generating function and inequalities of Grüss type we obtain new necessary and sufficient conditions for convergence of any quadrature rule.