**Dagnino, C.**; **Demichelis, V.**; **Lamberti, Paola**

**A nodal spline collocation method for the solution of Cauchy singular integral equations.** (English) Zbl 1176.65153

JNAIAM, J. Numer. Anal. Ind. Appl. Math. 3, No. 3-4, 211-220 (2008).

The authors present a collocation method, based on optimal nodal spline approximation, for solving the following singular integral equation with constant coefficients

$$aw_{\alpha,\beta}(x)f(x) + \frac{b}{\pi}\int_{-1}^{1}\frac{w_{\alpha,\beta}(t)f(t)}{t-x}dt + \int_{-1}^{1} w_{\alpha,\beta}(t)k(x,t)f(t)dt = g(x), \quad -1 < x < 1,$$

where the first integral is defined in the sense of Cauchy principal value, $k$ is a Fredholm kernel and $w_{\alpha,\beta}$ is the Jacobi weight function

$$w_{\alpha,\beta}(t) = (1-t)^{\alpha}(1+t)^{\beta}, \ \alpha, \beta > -1.$$

Reviewer: Temuri A. Jangveladze (Tbilisi)

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Nodal splines; Cauchy singular integral equations; collocation method; Cauchy principal value; Fredholm kernel; Jacobi weight function