A FAST ALGORITHM FOR A CLASS OF INTEGRAL EQUATIONS WITH LOGARITHMIC KERNELS

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Basing on convergence results of a collocation and a collocation-quadrature method for the numerical solution of integral equations of the form

$$-\frac{1}{\pi} \int_{-1}^{1} \left[(y-x)^{\kappa} \ln|y-x| - h(x,y) \right] \frac{u(y)\,dy}{\sqrt{1-y^2}} = f(x)\,, \ \ -1 < x < 1\,,$$

where $\kappa = 0, 1, 2$, we present a fast algorithm for the approximate solution of such integral equations.