De Bonis, M. C.; Laurita, C.; Sagaria, V.

Summary: A Nyström method for linear second kind Volterra integral equations on unbounded intervals, with sufficiently smooth kernels, is described. The procedure is based on the use of a truncated Lagrange interpolation process and of a truncated Gaussian quadrature formula. The stability and the convergence of the method in suitable weighted spaces of functions are studied and some numerical examples showing its reliability are presented. In particular, the proposed method has been tested for the numerical resolution of some Volterra integral equations arising from the reformulation of differential models describing metastatic tumor growth whose unknown solutions represent biological observables as the metastatic mass or the number of metastases.

MSC:
65Rxx Numerical methods for integral equations, integral transforms
41Axx Approximations and expansions
45Dxx Volterra integral equations

Keywords:
Volterra integral equations; Nyström method; Lagrange interpolation; Gaussian rule

Full Text: DOI

References:

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.