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ANALYTICAL AND NUMERICAL RESULTS FOR WEAKLY SINGULAR VOLTERRA INTEGRAL EQUATIONS

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In this talk we consider a nonlinear integral equation with weakly singular kernel [1], [2]. A series expansion for the solution is obtained and shown to be convergent in a neighbourhood of the origin. Owing to a singularity of the solution at the orign, the global convergence orders of product integration and collocation methods are not optimal. However, the optimal orders can be recovered if we use collocation methods based on graded meshes. A theoretical proof is given and we present some numerical results that illustrate the performance of the methods.

REFERENCES

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