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Adson M. Rocha, Juarez S. Azevedo, Saulo P. Oliveira, Maicon R. Correa

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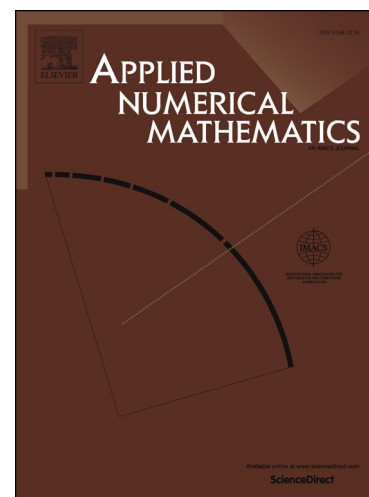
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## Numerical analysis of a collocation method for functional integral equations

Adson M. Rocha<sup>a,\*</sup>, Juarez S. Azevedo<sup>a</sup>, Saulo P. Oliveira<sup>b</sup>, Maicon R. Correa<sup>c</sup>

<sup>a</sup>*CETEC-UFRB, Centro, 44380-000, Cruz das Almas-BA, Brazil.*

<sup>b</sup>*DMAT-UFPR and INCT-GP, 81531-980, Curitiba-PR, Brazil.*

<sup>c</sup>*DMA-IMECC-UNICAMP, 13083-859, Campinas-SP, Brazil.*

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### Abstract

1 We study the numerical approximation of functional integral equations, a class  
2 of nonlinear Fredholm-type integral equations of the second kind, by the collocation  
3 method with piecewise continuous basis functions. The resulting nonlinear  
4 algebraic system is solved with the Picard iteration method. Starting from the  
5 analysis of the continuous problem in  $L^\infty([a, b])$ , we prove the convergence of  
6 numerical solution and, under an additional regularity assumption, provide an  
7 a priori error estimate. Numerical examples illustrate the predicted theoretical  
8 results.

9 *Keywords:* Nonlinear Fredholm Integral Equation, Collocation Method,  
10 Picard Iteration.

11 *2000 MSC:* 65R20, 45B05, 47H30, 45G10

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\*Corresponding author.

*Email addresses:* [adson@ufrb.edu.br](mailto:adson@ufrb.edu.br) (Adson M. Rocha), [juarez@ufrb.edu.br](mailto:juarez@ufrb.edu.br) (Juarez S. Azevedo), [saulopo@ufpr.br](mailto:saulopo@ufpr.br) (Saulo P. Oliveira), [maicon@ime.unicamp.br](mailto:maicon@ime.unicamp.br) (Maicon R. Correa)

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