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Advances on collocation based numerical methods for ordinary differential equations and Volterra integral equations. (English) [Zbl 1216.65097](#)

Simos, Theodore E. (ed.), Recent advances in computational and applied mathematics. Dordrecht: Springer (ISBN 978-90-481-9980-8/hbk; 978-90-481-9981-5/ebook). 41-66 (2011).

Summary: We present a survey on collocation based methods for the numerical integration of ordinary differential equations and Volterra integral equations, starting from the classical collocation methods, to arrive at the most important modifications appearing in the literature, also considering the multistep case and the usage of a basis of functions other than polynomials.

For the entire collection see [\[Zbl 1201.65004\]](#).

MSC:

- [65L60](#) Finite element, Rayleigh-Ritz, Galerkin and collocation methods for ordinary differential equations
- [65R20](#) Numerical methods for integral equations
- [65L05](#) Numerical methods for initial value problems involving ordinary differential equations
- [34A34](#) Nonlinear ordinary differential equations and systems
- [65L06](#) Multistep, Runge-Kutta and extrapolation methods for ordinary differential equations
- [45D05](#) Volterra integral equations
- [45G10](#) Other nonlinear integral equations

Cited in **3** Documents

Keywords:

collocation; two-step collocation; Runge-Kutta methods; two-step Runge-Kutta methods; mixed collocation

Software:

[rknstabint](#)

Full Text: [DOI](#)