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Numerical solution of semilinear integrodifferential equations of parabolic type with nonsmooth data. (English) [Zbl 0701.65091](#)

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The integrodifferential equation $u_t + Au = B(u)$ with elliptic second-order operator A and with nonlinear integral operator $B(u) = \int_0^t f(t, s, x, u(x, s)) ds$ is studied. For the numerical solution by the Galerkin finite element method approximation properties are derived. Error estimates are derived for the discretization, in space by finite elements and in time variable by the backward Euler method, of a parabolic equation with a semilinear memory term. Special attention is paid to the case of nonsmooth data and to the computation of the memory term by quadrature.

Reviewer: [S.Mika](#)

MSC:

[65R20](#) Numerical methods for integral equations
[45J05](#) Integro-ordinary differential equations
[45G10](#) Other nonlinear integral equations

Cited in **18** Documents

Keywords:

integrodifferential equation; nonlinear integral operator; Galerkin finite element method; Error estimates; backward Euler method; semilinear memory term; nonsmooth data

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