

Numerical methods for delay differential equations (K. in 't Hout)

Karel in 't Hout

`hout@math.leidenuniv.nl`

Mathematical Institute, Leiden University, The Netherlands

This minisymposium is concerned with the numerical solution of initial value problems for delay differential equations. The prototype initial value problem is

$$U'(t) = f(U(t), U(t - \tau)) \quad (t > 0), \quad U(t) = g(t) \quad (-\tau \leq t \leq 0), \quad (1)$$

where f , g denote given functions and τ is a given positive real number, called the delay. Problems of the type (1), and various generalizations thereof, play an important role in many branches of science and engineering, e.g. mathematical biology and electrical circuit simulation.

In this minisymposium, both the analysis and the development of numerical discretizations for initial value problems for delay differential equations are considered. Here the interest is especially in initial value problems that are stiff. Accordingly, notable attention is directed towards implicit numerical discretizations. New results on the stability as well as on the design of implicit numerical schemes are discussed.