SEMINARIO

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Rational methods for abstract evolution problems without order reduction

Abstract: Starting from an A-stable rational approximation to e^z of order p,

$$r(z) = 1 + z + \cdots + z^p/p! + O(z^p + 1),$$

families of stable methods are proposed to time discretize abstract initial value problems of the type $u'(t) = Au(t) + f(t)$. These numerical procedures turn out to be of order p, thus overcoming the order reduction phenomenon. A first approach to extend the methods to semilinear problems of the form $u'(t) = Au(t) + f(t,u)$ is also presented.

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