عنوان مقاله:

Numerical solution for interval initial value problems based on interactive arithmetic

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خلاصه مقاله:

This work studies Interval Initial Value Problems (IIVPs), where the derivative is given by the generalized Hukuhara derivative (gH-derivative) and the initial condition is given by an interval. The focus of the paper is to provide the numerical approximations for the solutions associated with the gH-derivative of IIVPs. This article considers the Euler numerical method, where the classical arithmetic operation is adapted for intervals. The arithmetic considered here is obtained using sup-J extension principle, where J is a particular family of joint possibility distributions. This family gives raise to different types of interactivity and this work shows what kind of interactivity is necessary in the numerical method, in order to approximate the solution via gH-derivative. To illustrate the results, the paper focuses in the decay Malthusian model.

کلمات کلیدی:

Interval initial value problem, Generalized Hukuhara derivative, euler method, malthusian model, interactivity