

On the Blunting Method in Verified Integration of ODEs

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Interval methods for ODEs often face two obstacles in practical computations: the dependency problem and the wrapping effect. Taylor model methods, which have been developed by Berz and his group, have recently attracted attention. By combining interval arithmetic with symbolic calculations, these methods suffer far less from the dependency problem than traditional interval methods for ODEs. By allowing nonconvex enclosure sets for the flow of a given initial value problem, Taylor model methods have also a high potential for suppressing the wrapping effect.

Makino and Berz advocate the so-called blunting method. In this talk, we analyze the blunting method (as an interval method) for a linear model ODE. We compare its convergence behavior with that of the well-known QR interval method.