

Wrong solutions for differential systems

Uri M. Ascher

Computer Science, UBC, Vancouver, Canada

We discuss situations where subtle reasons lead to wrong numerical solutions for differential equations. Such unhappy events often occur in the context of fractional step methods, especially when using conservative time discretizations, and there are some well-known examples for that. But other, rather different situations may give rise to similar phenomena as well. These will be demonstrated by computational examples, including the simulation of friction, damping and contact effects in deformable object motion arising in computer graphics animation and robotics.