Regularization and numerical solution of hybrid differential-algebraic equations

Volker Mehrmann (TU Berlin), Peter Kunkel

The solvability and regularity of hybrid differential-algebraic systems (DAEs) is studied, and classical stability estimates are extended to hybrid DAE systems. Different reasons for non-regularity are discussed and appropriate regularization techniques are presented. This includes a generalization of Filippov regularization in the case of so-called chattering. The results are illustrated by several numerical examples