

MATHEMATIKKOLLOQUIUM

Das Institut für Mathematik lädt zu folgendem Vortrag ein:

Efficient numerical solution of singular BVPs in ODEs using bvpsuite

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Our aim is to present the open domain Matlab code `bvpsuite` for the efficient numerical solution of boundary value problems in ordinary differential equations. Motivated by applications, we are especially interested in designing a code whose scope is appropriately wide, including fully implicit problems of mixed orders, parameter dependent problems, problems with unknown parameters, problems posed on semi-infinite intervals, eigenvalue problems and differential algebraic equations of index 1. Our main focus is on singular boundary value problems in which singularities in the differential operator arise. We first briefly recapitulate the analytical properties of singular systems and the convergence behavior of polynomial collocation used as a basic solver in the code for both singular and regular ordinary differential equations and differential-algebraic equations. We also discuss the a posteriori error estimate and the grid adaptation strategy implemented in our code. Finally, we describe the code structure and present the performance of the code which has been equipped with a graphical user interface for an easy use.

Zeit: Mittwoch, 2. Juni 2010, 11⁰⁰ Uhr

Ort: Technikerstr. 13, Bauingenieurgebäude, HSB 8

Mechthild Thalhammer

Gäste sind herzlich willkommen!