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Axel Ruhe

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It is with some awe I start volume 50 of BIT. I look back into my advisor Carl-Eric Fröberg's neatly hand written notebook, where all the manuscripts, referees and proofs are noted from 1960 to 1992. It looks like a correspondence between close friends. Quotes like “sent to Naur”, “back from Dahlquist”, “sent to typesetting”, “1 proof” and “read by author”, follow the tracks of a manuscript. After 1992, Åke Björck and I his successors, have done our best to keep it in the family style, even if our family is now spread all around the Globe.

Let me now present the contributions to this first issue of volume 50:

Manuel Calvo, José María Franco, José Ignacio Montijano and Luis Rández study trigonometrically fitted Runge Kutta methods. Such a method is symmetric, symplectic and integrates an initial value problem whose solution is a trigonometrical polynomial (with a given frequency) up to a certain degree. The total error after many steps of integration is of a special interest.

Philippe Chartier, Eric Darrigrand and Erwan Faou show how to use the Fast Multipole Method (FMM) to approximate the Coulomb energy and its gradient during geometric numerical integration of Hamiltonian systems used to solve astronomy or molecular-dynamics problems.

Xiao Shan Chen gives perturbation bounds for the Schur triangular form of a periodic regular matrix pair. This Schur form is most often an intermediate result when computing eigenvectors and reducing subspaces, but it is sometimes of interest in itself, and has some interesting special features.

A. Ruhe (✉)

Department of Numerical Analysis and Computer Science, NADA, Royal Institute of Technology
KTH, 10044 Stockholm, Sweden
e-mail: ruhe@nada.kth.se

Armin Lechleiter studies algorithms to generate an image of an object directly from scattering observation data, without taking the time consuming way through a model of the object itself. It is used for imaging fine grained dielectric diffraction gratings.

Siddhartha Mishra and *Magnus Svärd* solve symmetric hyperbolic equations by a summation by parts and simultaneous approximation term (SBP-SAT) finite difference scheme. They show when such a method is stable for variable coefficients and use it to solve the magnetic induction equations.

Yuji Nakatsukasa shows that a multiple eigenvalue of a positive definite Hermitian pencil gets perturbed into a set of eigenvalues, some of them close and some of them farther away from the original position.

Sotirios E. Notaris gives bounds for the norms of the error functionals of Gauss Radau quadrature rules with the four Chebyshev weight functions.

Sheehan Olver describes a stable algorithm for oscillatory integrals with stationary points. It does not lose accuracy as the frequency increases and does not require deformation into the complex plane. For the case without stationary points, it is equivalent to a Levin collocation method.

Leif Simonsson and *Lars Eldén* give a Grassman algorithm to fill in missing observations in a data matrix assumed to have a low rank. Missing observations cause interesting complications, the simple nested approximations given by the SVD are no longer available, and local schemes do not work when many observations are absent.

Jiming Wu, *Xiaoping Zhang* and *Dongjie Liu* describe an algorithm to compute the Clausen functions that are used to compute some singular integrals from quantum field theory. The algorithm is based on a novel rapidly convergent series expansion.

Naimin Zhang describes a preconditioner that can be used when solving a singular linear system by means of the general minimal residual algorithm, GMRES.

Welcome to another issue of BIT!

Axel Ruhe