LINEAR ALGEBRA AND ITS APPLICATIONS

CALL FOR PAPERS

Special Issue on *Matrix Functions*

Matrix functions can be broadly defined as matrices understood as changing quantities rather than given and constant. As such, the study of matrix functions encompasses a large part of linear algebra and its applications. The need for matrix functions is apparent in many applications in mathematics, sciences, and engineering, for instance systems of first order linear differential equations with constant coefficients, and (mechanical or electrical) vibrating systems.

LAA has previously published a special issue devoted to the field of matrix functions; see Vol. 137–138, 1990 (J. A. Ball, L. Rodman, P. Van Dooren, editors). Because the last years witnessed a strong increase of research interest in the area of matrix functions we feel that it is time to reflect again on the field.

This special issue is devoted to theoretical studies and applications of matrix functions on all their aspects. Its goals are to highlight recent advances and developments, outstanding open problems, and applications of matrix functions, on the many facets, techniques, and results of this field. It will be open to all papers with significant new results where matrix functions play an important role and problems of linear algebraic nature are presented. Survey papers that illustrate several interconnected aspects of the theme of matrix functions and their applications are highly encouraged, as are research problems articles.

Areas and topics of interest for this special issue include, but are not limited to:

- Methods and theory for

    - Matrix polynomials
    - Rational matrix functions
    - Analytic and meromorphic matrix functions
    - Matrix exponential, logarithm, square root, and others
    - Functions of structured matrices
    - Functions of large and sparse matrices
    - Functions of matrices times a vector
    - Conditioning and perturbation
    - Interpolation

- Applications in

    - Linear dynamical systems and ODE solvers
    - Operator theory
    - Singular systems
    - Canonical systems of differential equations
    - Integral equations
    - Network analysis
    - Control theory
    - Model reduction
    - Domain decomposition
    - Mathematical physics

The **deadline for submission** of papers is **July 31, 2012**, and the special issue is expected to be published in 2013. Papers should be submitted to the responsible editor-in-chief V. Mehrmann, choosing the special issue "Matrix Functions", through the electronic submission system of LAA at http://ees.elsevier.com/laa . They must meet the publication standards of LAA and will be refereed in the usual way.

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