
E-LETTER of the Numerics in Control Network NICONET
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CONTENTS:

- 1 Welcome to the NICONET E-letter number 16!
 - 2 New issue of the NICONET Newsletter available
 - 3 New additions to SLICOT since May 2002
 - 4 New NICONET Reports since May 2002
 - 5 NICONET events
 - 6 (Forthcoming) Meetings and symposia attended by NICONET partners
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1 Welcome to the NICONET E-letter number 16 (last issue)!

This E-letter is sent out quarterly and informs you about the newest updates. Also, new NICONET reports and important NICONET activities are announced in this E-letter. Our NICONET project funded by the EC comes to its end on June 30, 2002. Future activities and tasks, as well as the further update and maintenance of the SLICOT library, will now be taken over by the recently founded NICONET international society. We decided to stop issuing this E-letter but refer interested readers and SLICOT

users to our bi-annual NICONET newsletter which we will continue to publish! In particular, we encourage contributors to provide information on the use of the SLICOT library (performance, improvements, new suggestions) and submit this information to me as a small report for our newsletter.

Sabine Van Huffel
Chairperson of WGS and Coordinator of NICONET.

2 New issue of the NICONET Newsletter available

Communicated by Sabine Van Huffel:

The 9-th issue of our NICONET Newsletter is now available and can be downloaded as compressed postscript file from the World Wide Web URL:

<http://www.win.tue.nl/niconet/> and choose: Newsletters

or from the WGS ftp site:

<ftp://wgs.esat.kuleuven.ac.be> (directory pub/WGS/NEWSLETTER/)
(filename: issue-2-02.ps.Z)

Contents:

1. Editorial
2. Basic numerical SLICOT tools for control
3. SLICOT tools for model reduction
4. SLICOT tools for subspace identification
5. SLICOT tools for robust control
6. SLICOT tools for nonlinear systems in robotics
7. SLICOT: a useful tool in industry?
Applications of SLICOT model reduction routines
9. Order reduction of Large-Scale Systems. Call for papers:
Special issue of Linear Algebra and Its Applications
10. NICONET information corner

3 New additions to SLICOT since May 2002

Communicated by Vasile Sima:

The latest changes in the library contents or routine updates - till the next SLICOT Release - are announced in the file Release.Notes, located in directory /pub/WGS/SLICOT/ on the WGS ftp site. Previous updates are described, in reverse chronological order, in the file Release.History, located in the same directory.

SLICOT routines can be downloaded from the WGS ftp site:

<ftp://wgs.esat.kuleuven.ac.be>

(directory /pub/WGS/SLICOT/ and its subdirectories) in compressed (gzipped) tar files. On line .html documentation files are also

provided there. The library and its documentation are also accessible from the WGS homepage at the World Wide Web URL:

<http://www.win.tue.nl/niconet/>

after linking from there to the SLICOT web page and clicking on the FTP site link in the freeware SLICOT section.

The latest SLICOT Library update took place on June 29, 2002. This update included few changes in some routines (AB13FD, IB03AD, IB03BD, MB03NY, MC01OD, MC01PD, and SB02OD), and addition of 7 new routines. The changes were minor. Details are given in the file Release.Notes.

The new user-callable and computational routines posted on the ftp site include Mathematical Routines, Synthesis Routines, and Transformation Routines, performing the following main tasks:

- compute the coefficients of a real polynomial $P(x)$ from its zeros. The coefficients are stored in decreasing order of the powers of x .
- solve either the continuous-time or discrete-time algebraic Riccati equations for descriptor systems.
- compute the transfer function matrix G of a state-space representation (A,B,C,D) of a linear time-invariant multivariable system, using the pole-zeros method. Each element of the transfer function matrix is returned in a cancelled, minimal form, with numerator and denominator polynomials stored either in increasing or decreasing order of the powers of the indeterminate.
- separate the strictly proper part from the constant part of a proper transfer function matrix.
- compute the sum of an P -by- M rational matrix and a real P -by- M matrix.
- compute the gain of a single-input single-output linear system, given its state-space representation (A,b,c,d) , and its poles and zeros. The matrix A is assumed to be in an upper Hessenberg form.
- compute the transfer function matrix G of a state-space representation (A,B,C,D) of a linear time-invariant multivariable system, using the pole-zeros method. The transfer function matrix is returned in a minimal pole-zero-gain form.

Three new example programs, two MEX-files and four M-files have been included. These MATLAB/Scilab interfaces are destined for performing (partial) pole assignment, or computing the periodic Hessenberg or periodic Schur decomposition of a matrix product, using orthogonal transformations, and without forming the product.

The toolbox for nonlinear Wiener systems identification has been again updated.

4 New NICONET Reports since May 2002

Communicated by Sabine Van Huffel:

The following NICONET reports can be downloaded as compressed

postscript files from the World Wide Web URL:

<http://www.win.tue.nl/niconet> and choose: reports

or from the WGS ftp site:

<ftp://wgs.esat.kuleuven.ac.be> (directory pub/WGS/REPORTS/)

FILE NAME: SLWN2002-6.ps.Z
REPORT NUMBER: 2002-6
FORMAT: Compressed postscript.
AUTHORS: Rene Schneider, Andreas Riedel, Vincent Verdult,
Michel Verhaegen, Vasile Sima
TITLE: SLICOT system identification toolbox for nonlinear
Wiener systems
ABSTRACT: A systematic approach to address the Wiener
identification problem is given. The structure of the
numerical library to identify Wiener systems according
to this approach is described, as well as the interface
enabling the developed Fortran routines to be used in
Matlab and Scilab. Finally, a number of illustrations of
the use of the developed software is given.
STATUS: available since June 2002

5 NICONET events

Since July 1, 2002, our EC thematic network project came to its end and at present we are finalizing our EC reports. We hope that our activity can be funded in the 6th framework. Therefore, we submitted an Expression of Interest in June in order to improve our chances for setting up or joining a network of excellence. Calls are coming out in the fall of this year. In the meantime maintenance and further development of the SLICOT library will be guaranteed by our international society, also called NICONET, which is operational since September 2001. Any funding received through this society will be used for the further development of the SLICOT library, as well as for the promotion and dissemination of the SLICOT software.

6 (Forthcoming) Meetings and symposia attended by NICONET partners

Communicated by Vasile Sima and Sabine Van Huffel:

Conferences related to the NICONET areas of interest, where NICONET partners presented or will present NICONET/SLICOT-related talks and papers, and/or disseminate information and promote SLICOT, are the following:

IFAC Congress, Barcelona, July 2002.

SIAM's 50th Anniversary and 2002 Annual Meeting, Philadelphia Marriott Hotel, July 8-12, 2002.

MTNS, ``Mathematical Theory of Networks and Systems'' meeting 2002, University of Notre Dame, South Bend, Indiana, USA, August

12-16, 2002, see <http://www.nd.edu/mtns/>

Joint ``IEEE Conference on Control Applications`` and ``IEEE Conference on Computer Aided Control Systems Design``, September 17-20, 2002, Scottish Exhibition & Conference Centre, Glasgow, Scotland.

END OF THE NICONET E-LETTER
