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INSTRUCTIONS

(To Minisymposium Organizers and Speakers)

1. Please use an elite typing element and carbon ribbon, if available.
2. Begin typing the abstract title, text, and author information directly below the heading captions. Type flush left, single-spaced within the space designated. Do not indent. [redacted]
3. Abstract title should be underlined. Capitalize the first letter of all words, except articles, prepositions and conjunctions.
4. Abstract should not exceed 100 words. Please explain what the problem area is that you will address, and why the problem is important; outline the kinds of methods being used today to solve the problem(s), what shortcomings there are in using them, and what is being done to improve them; describe the scope of your presentation as it relates to the proposed title and what it will cover. References, if necessary, should be in the body of the abstract. Formulas should be kept to a minimum—please, no vertical fractions, multiple subscripts, or hand-written symbols. Abstracts must be submitted on this form and will be printed as received. Errors in the text are the author's responsibility.
5. For two or more authors of the same affiliation and address, type the latter only once, directly below the authors' names.
6. You must type your abstract directly on this form. Abstracts that are cut and pasted onto this form will be returned.

IMPORTANT: ABSTRACTS MUST BE MAILED UNFOLDED.

PLEASE ANSWER THE FOLLOWING:

1. Visual Equipment

_____Overhead Projector

_____2''x2'' Slide Projector (35mm)

2. Subject Classification
(Choose one or two from list on reverse side)

_____ _____

Fast Algorithms for the Triangularization of Polynomial Matrices

The theory of polynomial matrices plays a key role in the design and analysis of multi-input multi-output control systems. More generally, matrices with entries from various principal ideal rings arise in many practical problems in communications and control, such as the design of convolutional coders and the analysis of computational aspects which accompany such matrices are not widely appreciated at present. Indeed, one popularly held belief is that polynomial matrix problems are merely "big" linear algebra problems, but are otherwise essentially straightforward from a numerical standpoint. However, time and again, when confronted by real-world data, the best algorithms of linear algebra fail miserably despite meticulous program design and use of multiple precision floating-point arithmetic. We will describe the nature of this unexpectedly bad behavior and present new algorithms which circumvent it entirely through the use of exact, symbolic methods in computer algebra. Emphasis will be placed on efficient algorithms to compute exact Hermite forms for polynomial matrices because this triangularization procedure is central to a large variety of algorithms important in the design of control and communication systems.

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Deadline for Submission of Abstract

(PLEASE COMPLETE PAGE 2)