

August 1972

B72-10486

# NASA TECH BRIEF

## *Marshall Space Flight Center*



NASA Tech Briefs announce new technology derived from the U.S. space program. They are issued to encourage commercial application. Tech Briefs are available on a subscription basis from the National Technical Information Service, Springfield, Virginia 22151. Requests for individual copies or questions relating to the Tech Brief program may be directed to the Technology Utilization Office, NASA, Code KT, Washington, D.C. 20546.

### Compensator Design for Low-Sensitivity Linear Time-Invariant Systems (COMPDES)

#### The problem:

A method was needed to reduce the trial and error procedures now employed in the design of low order compensators that stabilize a given dynamical system in the presence of parameter variations.

#### The solution:

A digital computer program has been written in FORTRAN IV that has the capability of synthesizing low order compensators to stabilize these systems.

#### How it's done:

The scheme for the design of the compensators is accomplished by means of a sensitivity function which is minimized with respect to the eigenvalues. A compensator is considered acceptable if a stability criteria test is satisfied.

In the present form, the program is dimensioned for a maximum of sixth order. Machine memory capacity will be a limiting factor as to whether or not the program can be redimensioned to accommodate larger order systems.

#### Notes:

1. This program is written in FORTRAN IV for an IBM-360 computer.
2. Inquiries concerning this program should be submitted to:

COSMIC  
112 Barrow Hall  
University of Georgia  
Athens, Georgia 30601  
Reference: MFS-21652

Source: Lutz Willner of  
Rensselaer Polytechnic Institute  
under contract to  
Marshall Space Flight Center  
(MFS-21652)

Category 09