NASA TECH BRIEF

Accurate Digital Technique Simulates Flight Control System

A fast, accurate technique for simulating the Saturn Flight Control System has been devised. The technique is simple to implement and can be readily substituted for slower or less accurate techniques. In this technique, an analytical solution for the flight control filters is based on the step nature of the error signals. The input to the engine actuators for each time frame is considered to consist of step changes (caused by dc bypass and gain changes) plus the time-varying output of the filters. The output of the filters is approximated over each time frame by a linear segment. The resulting analytical solution is appropriately rate- and position-limited to provide engine deflections.

This technique can be applied to a large class of problems that require a rapid accurate calculation of the response of linear differential equations to a continuous input.

Note:

Documentation is available from:
Clearinghouse of Federal Scientific
and Technical Information
Springfield, Virginia 22151
Price $3.00
Reference: B68-10569

Patent status:

No patent action is contemplated by NASA.

Source: J. R. Hays
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