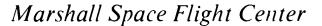
NASA TECH BRIEF





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.

Numerical Integration of Second Order Differential Equations

A numerical integration technique using a reducedstep function evaluation determines approximate solutions to second order differential equations. The technique may be useful in evaluating system performance, analyzing material characteristics, and designing inertial guidance and nuclear instrumentation and materials.

The performance characteristics of higher order approximations of the Runge-Kutta type are analyzed, and performance predictors for the time required on the machine and for the error size are developed. These predictors are not designed to give precise information; but supporting data shows that the information obtained provides a useful guide in solving the problem.

The predictors and data indicate that the formulas that' should be used are Shanks' formulas of the sixth, seventh, and eighth orders.

Note:

Requests for further information should be directed to:

Technology Utilization Officer Code A&TS-TU Marshall Space Flight Center Huntsville, Alabama 35812 Reference: B71-10186

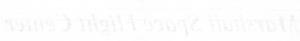
Patent status:

No patent action is contemplated by NASA.

Source: E. B. Shanks of Vanderbilt University under contract to Marshall Space Flight Center (MFS-20536)

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