RC 4000 COMPUTER®

SPECIFICATION

MATHEMATICAL PROCEDURE LIBRARY

This specification describes the initial library of numerical-mathematical Algol procedures developed for the extended RC 4000 computer with drum and/or disc as backing store.

Program Configuration

The procedures are written in the Algol 5 language and can only be executed under the control of the Algol 5 system and the time-sharing system Monitor 1.

The numerical-mathematical library will initially contain about 20 Algol procedures covering the following problems:

- solution of simultaneous linear equations with an arbitrary, symmetric, or band matrix of coefficients
- calculation of eigenvalues and eigenvectors for a symmetric or arbitrary matrix
- solution of simultaneous ordinary differential equations
- calculation of definite integrals
- calculation of all zeros for a polynomial or a zero for a given function
- calculation of Fourier coefficients, and calculation of a Fourier sum
- calculation of the Bessel functions and the modified functions of the first and second kind
- extremum calculation for a function of several variables
- multiple linear regression analysis and least squares polynomial approximation
- analysis of variance.

The library will be expanded continually to include many special cases of these basic problems and to allow the use of the backing store for problem data.

SOFTWARE

```
  begin
    length:= 
  end
end EOF proc;
open (master,
open (new_mast
open (transact
      comment
inrec (master,
inrec (transac
next:
if master (1)
begin comment
  newrec (new_
  new_master (
  new_master (
  new_master (
  inrec (trans
  go_to next
end 5;
if master (1)
begin comment
  newrec (new_
  for i:= 1 st
    new_master
  inrec (maste
  go_to next
end 7;
if master (1)
begin comment
  master (2):=
  inrec (trans
  go_to next
end;
      comment
close (master,
close (transac
end;
```

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