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An Orthonormalization Procedure for Multivariable Function Approximation

The problem:

In many types of scientific and engineering problems, a table of two or more columns of data occurs and it is often desirable to present this data in a more useful form. The usual methods for performing this task are the many different techniques of multivariable function approximation such as the least squares procedures that require appreciable time to compute the coefficients.

The solution:

Where a function of several variables is given numerically in tabular form, an orthonormalization technique allows an approximation of the numerical data to be determined in a convenient functional form. The method requires much less computational work than the usual least squares technique, and

allows more easily controlled accuracy. In this technique, the speed and accuracy of coefficient computation are much improved. Additionally, a very clear and useful physical interpretation of the procedure is available to aid in the choice of terms to be included in the approximating formulas.

Note:

Inquiries concerning this innovation may be directed to:

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Reference: B66-10579

Patent status:

No patent action is contemplated by NASA.

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Category 01