The editorial committee would welcome readers' comments about this microfiche feature. Please send comments to Professor Eugene Isaacson, MATHEMATICS OF COMPUTATION, Courant Institute of Mathematical Sciences, New York University, 251 Mercer Street, New York, New York 10012.

Mathematics of Computation

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ALGOL PROCEDURES FOR THE CALCULATION OF GAUSS QUADRATURE RULES

The ALGOL procedures given here are described in this issue in detail in the paper "Generation of Gauss quadrature rules" by Gene H. Golub and John H. Welsch. The procedure CLASSICORTHOPOLY generates the coefficients of the normalized three term recurrence relation for various classical orthogonal polynomials and it also yields the zeroth order moment. From the first 2N+1 moments of a weight function, the procedure GENORTHOPOLY generates the coefficients of the three term recurrence relation for the normalized orthogonal polynomials. Given the coefficients of the three term recurrence relation, the procedure GAUSSQUADRULE computes the abscissas and the weights of the Gaussian type quadrature rule associated with the orthogonal polynomials by the QR method. Finally, a driver program is presented for testing out the procedures described above.

```
procedure CLASSICORTHOPOLY(KIND, ALFA, BETA, N, A, B, MUZERO);
    value KIND, N, ALFA, BETA;
    integer KIND, N; real ALFA, BETA, MUZERO;
    real array A, B;
begin comment This procedure supplies the coefficients (A, B) of the
        normalized recurrence relation for various classical orthogonal
        polynomials and the moment MUZERO of its weight function. ;
    integer I; real PI, ABI, A2B2;
    switch SWT := LEGENDRE, CHEBY1, CHEBY2, JACOBI,
       LAGUERRE, HERMITE;
    PI := 3.14159265358979324 ;
    go to SWT[KIND];
LEGENDRE: MUZERO := 2.0;
    comment P(x) on [-1, +1], ω(x) = 1.0 ;
    for I := 1 step 1 until N-1 do
       begin A[I] := 0; B[I] := I/sqrt(4×I↑2-1) end;
    A[N] := 0; go to RETURN;
CHEBY1: MUZERO := PI;
    comment T(x) on [-1, 1], ω(x) = (1-x↑2)↑(-.5) ;
    for I := 1 step 1 until N-1 do
       begin A[I] := 0; B[I] := 0.5 end;
    B[1] := sqrt(0.5); A[N] := 0;
    go to RETURN;
CHEBY2: MUZERO := PI/2.0;
    comment U(x) on [-1, 1], ω(x) = (1-x↑2)↑.5 ;
    for I := 1 step 1 until N-1 do
       begin A[I] := 0; B[I] := 0.5 end;
    A[N] := 0; go to RETURN;
```