

# PIECEWISE INTEGRAL SPLINES OF LOW DEGREE

L. A. RASMUSSEN

Quaternary Research Center, University of Washington, Seattle WA 98195, U.S.A.

**Abstract.** —Algorithms are given for constructing low-degree ( $1 \leq k \leq 3$ ) polynomial splines having prescribed integral values for successive intervals of the independent variable. The algorithms are arranged so that the degrees of freedom of the spline are expressed in terms of boundary conditions: the ordinate at the first endpoint ( $1 \leq k \leq 3$ ), the ordinate at the last endpoint ( $k = 2, 3$ ), and the slope at the first endpoint ( $k = 3$ ). Any or all of these boundary conditions may be specified, and any that are not will be computed to minimize the sum of squares of the change of ordinate over each interval ( $k = 1$ ) or the integral of the square of the second derivative ( $k = 2, 3$ ).