

Table of Contents

I. INTRODUCTION	1
II. THEORETICAL BACKGROUND	
2.1. Automatic integration with QUADPACK	9
2.2. Integration methods	11
2.2.1. Quadrature sum	11
2.2.2. Construction of Gauss-type rules with preassigned abscissae	15
2.2.3. Modified Clenshaw-Curtis integration	28
2.2.4. Numerical quadrature and extrapolation	39
III. ALGORITHM DESCRIPTIONS	
3.1. QUADPACK contents	56
3.2. Prototype of algorithm description	59
3.3. Algorithm schemes	60
3.4. Heuristics used in the algorithms	67
IV. GUIDELINES FOR THE USE OF QUADPACK	
4.1. General remarks	75
4.2. Decision tree for finite-range integration	79
4.3. Decision tree for infinite-range integration	80
4.4. Numerical examples	81
4.5. Sample programs illustrating the use of the QUADPACK integrators	100
V. SPECIAL APPLICATIONS OF QUADPACK	
5.1. Two-dimensional integration	112
5.2. Hankel transform	118
5.3. Numerical inversion of the Laplace transform	121
VI. IMPLEMENTATION NOTES AND ROUTINE LISTINGS	
6.1. Implementation notes	128

6.2. Routine listings	129
QNG	130
QAG	137
QAGE	140
QAGS	147
QAGP	156
QAGI	167
QAWO	176
QAWF	180
QAWFE	184
QAWS	192
QAWSE	195
QAWC	203
QAWCE	206
QFOUR	213
QK15	225
QK21	229
QK31	233
QK41	237
QK51	241
QK61	245
QK15I	250
QK15W	254
QEXT	258
QSORT	262
QC250	265
QC25S	273
QC25C	281
QMOMO	285
QCHEB	288
QWGTO	291
QWGTS	292
QWGTC	293
QMACO	294
REFERENCES	295

