Introduction		5
1.	Analysis of differential-algebraic equations	14
1.1	Linear differential-algebraic equations with con-	
	stant coefficients	14
1.2	Transferable differential-algebraic equations	24
1.2.1	Suitable function spaces	26
1.2.2	Differential-algebraic equations	30
1.2.3	Transferability and correctness	35
1.2.4	Well-posed boundary value problems	45
1.2.4.1	Linear boundary value problems	46
1.2.4.2	Well-posed nonlinear boundary value problems and	
	linearization	55
1.2.4.3	Shooting methods	61
1.2.5	Stability	74
1.3	Nontransferable normal DAE's	85
1.3.1	Examples	87
1.3.2	Tractability with index 2	92
1.3.3	Canonical normal forms of DAE's and reduction	
	methods	104
2.	Integration methods	112
2.1	Runge-Kutta methods	112
2.2	Multistep methods	132
2.2.1	Construction and feasibility of multistep methods	
	for DAE's	132
2.2.2	Consistency and stability of linear multistep methods	145
2.2.3	Consistency and stability of one-leg methods	155
2.3	Instability of integration methods in the case of	
	non-transferable DAE's.	165
3.	Difference methods for boundary value problems	172
3.1	Formulating the difference schemes	172
3.2	Stability and feasibility	176
Appendix A:	Matrix theoretic foundation	191
Appendix B:	Transformation of normal DAE's into those with	
	special structure and into regular differential equa-	
	tions	204

Denotations	218
index	220

212

213

References - General Literature

References - Special Literature