

ALGOL	<i>Internal machine code of ERMETH^{1,2}</i>	
$a[101] := (a[0] + j) \uparrow 2;$	01 1 0000	02 0 0004
$a[1] := \text{sqrt}(1 + a[101]);$	19 0 8980	04 0 8980
if $c[-2] < 0$ then goto $\text{label}[150];$	19 1 0101	02 0 9001
goto $\text{label}[75];$	21 0 9900	00 0 0000
	19 1 0001	01 3 9998
	22 9 0075	21 9 0150

*External machine code
of ERMETH^{1,2}*

		CODAP ³	
A	1,0	LDA	A
+	4	FAD	J
S	8980	STA	TEMP
×	8980	FMU	TEMP
S	1,101	STA	A + 101
+	9001	FAD	ONE
C	9900	STA	TEMP
S	1,1	ENA	TEMP
A	3,9998	RTJ	SQRTF
C +	9,75	RTJ	ERROR
C	9,150	STA	A + 1
		LDA	C - 2
		AJP M	LABEL + 150
		AJP P	LABEL + 75

¹ The electronic computer ERMETH was constructed 1953—1956 under the direction of Prof. E. STIEFEL and Prof. A. P. SPEISER in the Department of Applied Mathematics (Swiss Federal Institute of Technology, Zürich). The ERMETH was in operation from 1956 until 1963; since 1960 it had an ALGOL compiler designed by Dr. H. R. SCHWARZ.

² The external and internal operation symbols of the ERMETH are: A|01: clear and add; S|19: store; +|02: floating add; ×|04: floating multiply; C|21: jump; C +|22: jump if positive. The digits following the operation symbol denote index (*B*-line) and address (these two are separated by a comma in the external notation). At 9900 begins the square root routine (with automatic return), and 9001 contains the floating point constant 1. It is assumed that the addresses of $a[0]$, $c[0]$ and $\text{label}[0]$ are stored in index registers 1, 3, 9 respectively, and that j is stored in storage position 4. For more details on ERMETH see J. R. STOCK [36].

³ The operation symbols of CODAP [11] are: LDA: clear and add; FAD: floating add; FMU: floating multiply; STA: store; RTJ: jump with automatic return; ENA: enter address of operand for the subsequent function call; AJP: conditional jump (P if positive, M if negative).