

TIME TO GENERATE THE STIFFNESS MATRIX

ELEMENT TYPE	T_i , SECONDS PER ELEMENT
<u>ONE-DIMENSIONAL ELEMENTS</u>	
RØD, TUBE	.003
BAR	.006
BEAM	.007
 <u>TRIANGULAR ELEMENTS</u>	
TRIA3	.007
TRIA6	.060
 <u>QUADRILATERAL ELEMENTS</u>	
QUAD4	.013
SHEAR PANEL	.010
QUAD8	.124
 <u>SOLID ELEMENTS</u>	
PENTA (6 NODES)	.013
PENTA (15 NODES)	.076
HEXA (8 NODES)	.025
HEXA (20 NODES)	.182
HEX20	.232
 <u>AXISYMMETRIC SOLIDS</u>	
TRIARG	.034
TRIA6	.039
TRAPRG	.072

CPU TIME FOR REAL MATRIX OPERATIONS

TIMING PARAMETERS, 10^{-6} SECONDS			
M	P_s	P	P_i
.50	0.40	0.60	5.5

M = ARITHMETIC TIME FOR UNVECTORIZED MULTIPLY/ADD LOOP.

P_s = PACK OR UNPACK ONE TERM IN A STRING OF NONZERO MATRIX TERMS.

P = PACK OR UNPACK ONE ELEMENT IN A COLUMN OF A MATRIX.

P_i = PACK OR UNPACK ONE NONZERO TERM IN A COLUMN OF A MATRIX.

CPU TIME FOR COMPLEX MATRIX OPERATIONS

TIMING PARAMETERS, 10^{-6} SECONDS			
M	P_s	P	P_i
0.70	0.50	0.90	6.0

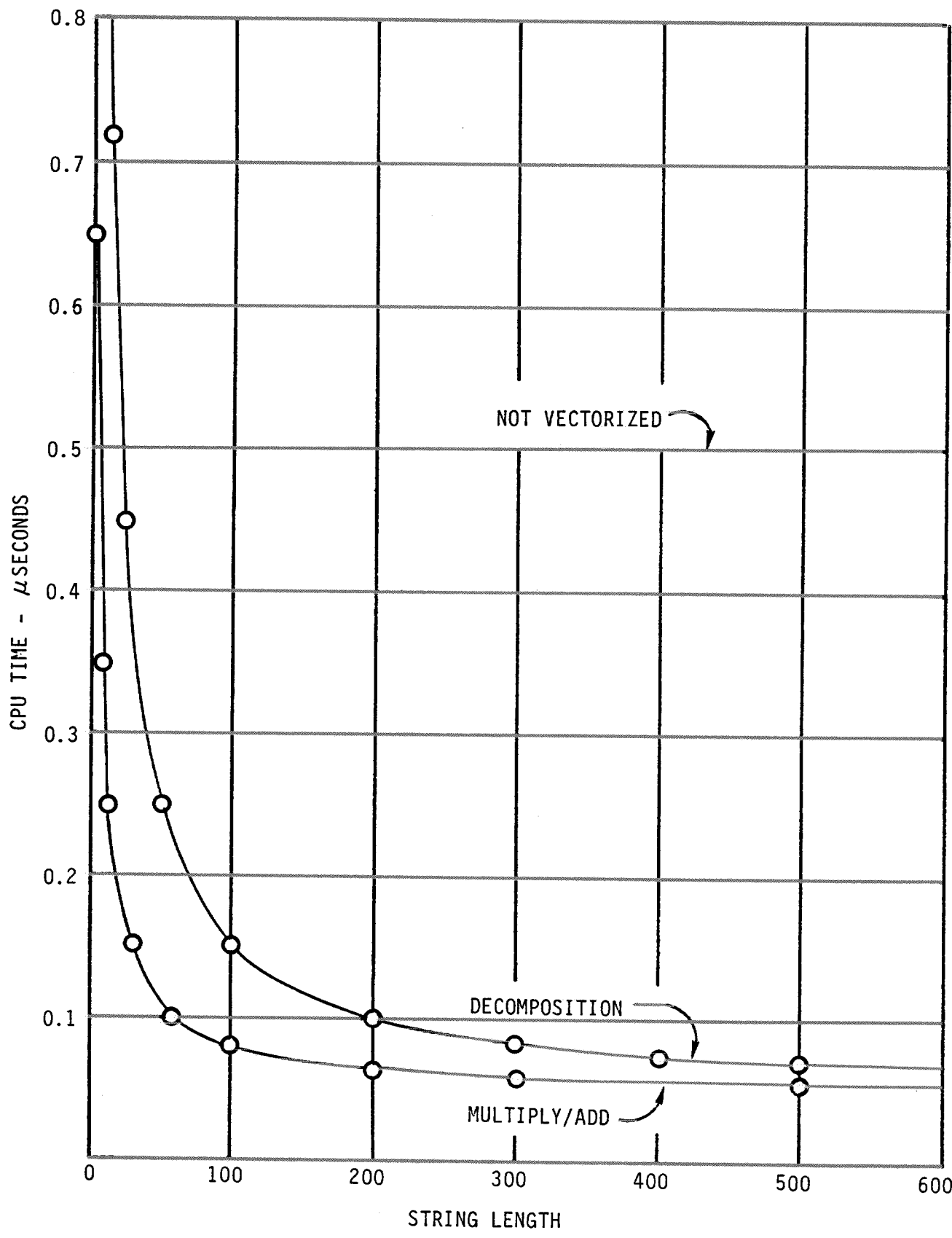
M = ARITHMETIC TIME FOR UNVECTORIZED MULTIPLY/ADD LOOP.

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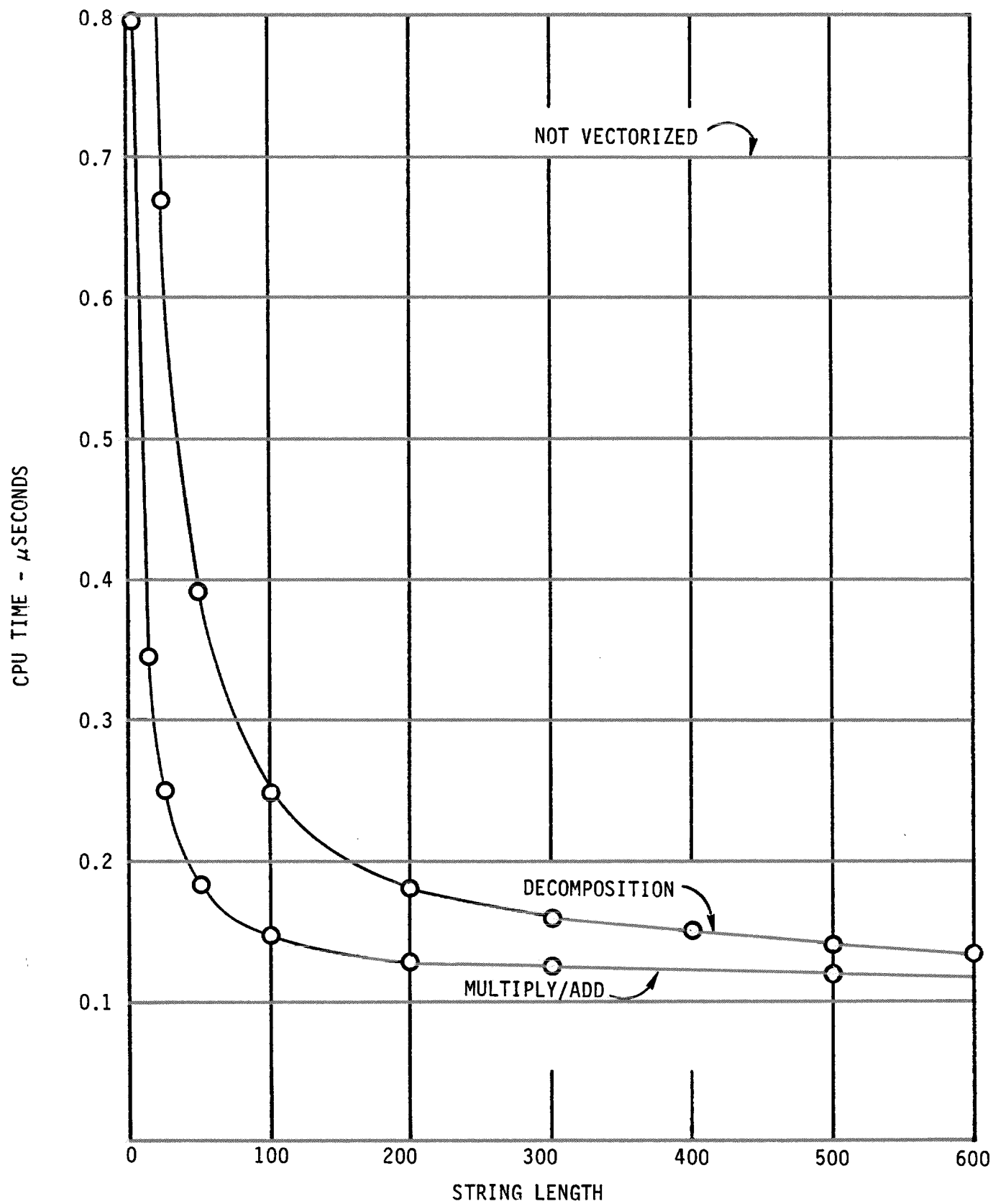
P = PACK OR UNPACK ONE ELEMENT IN A COLUMN OF A MATRIX.

P_i = PACK OR UNPACK ONE NONZERO TERM IN A COLUMN OF A MATRIX.

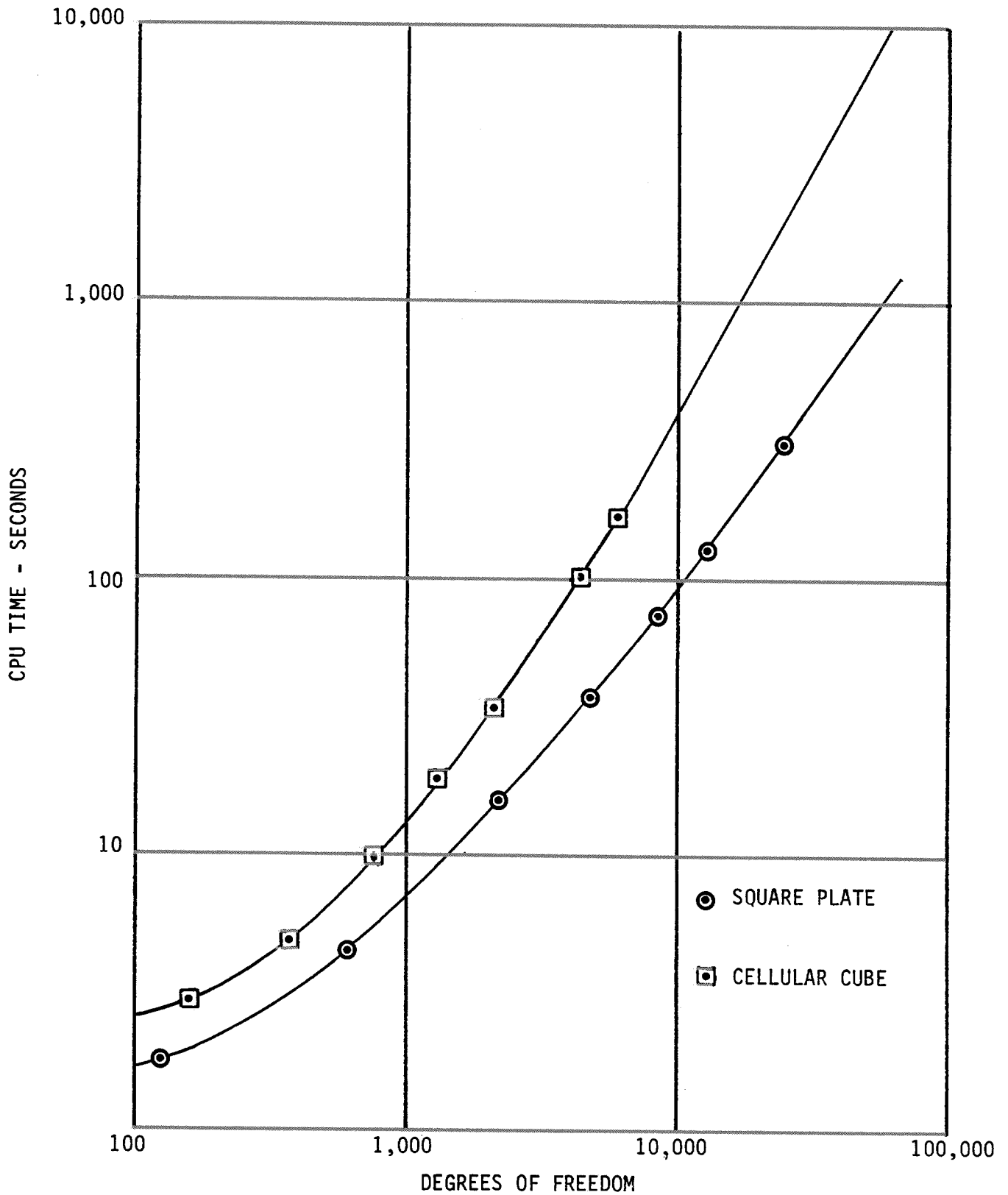
ARITHMETIC TIMES - REAL VECTORIZED LOOPS



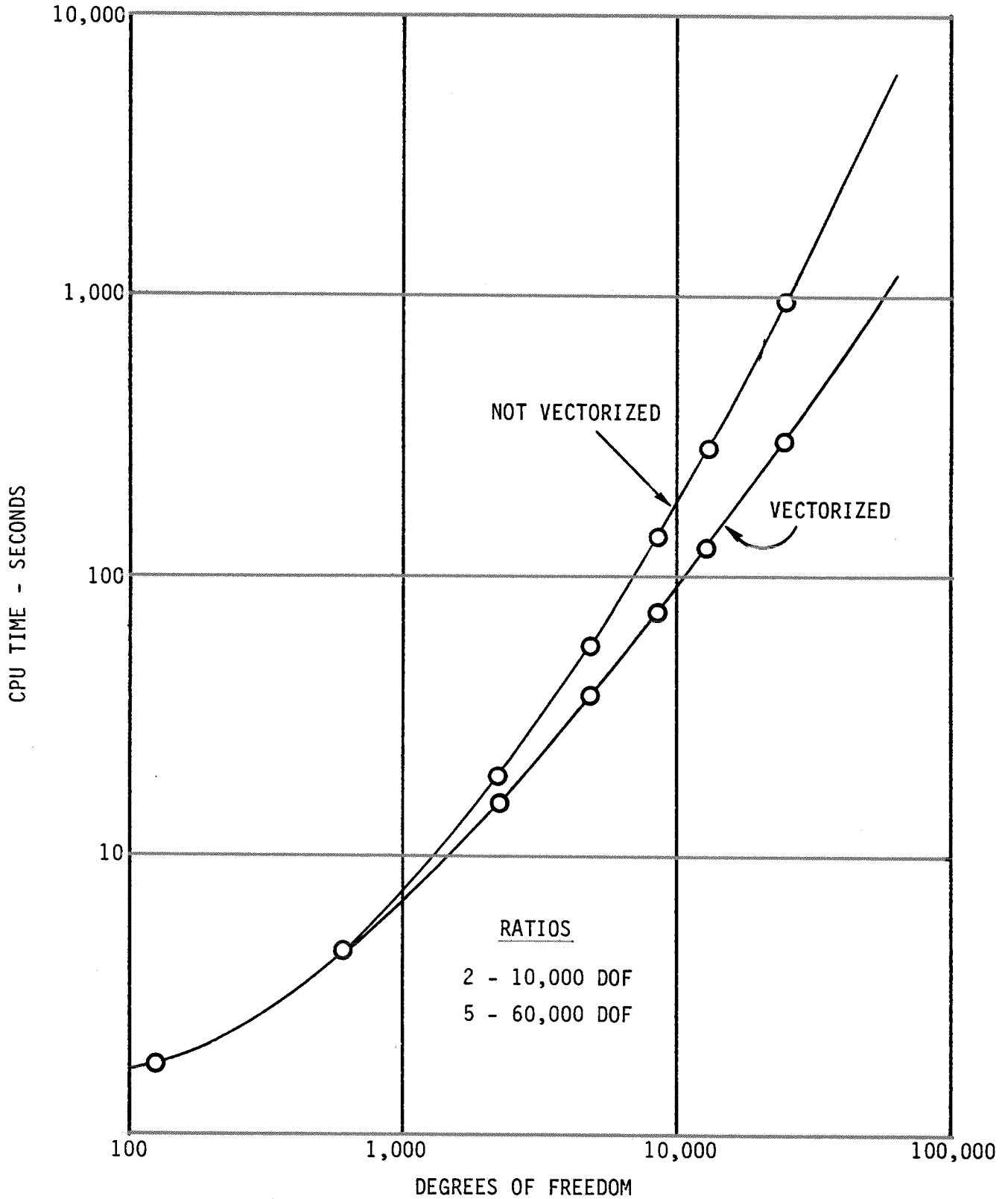
ARITHMETIC TIMES - COMPLEX VECTORIZED LOOPS



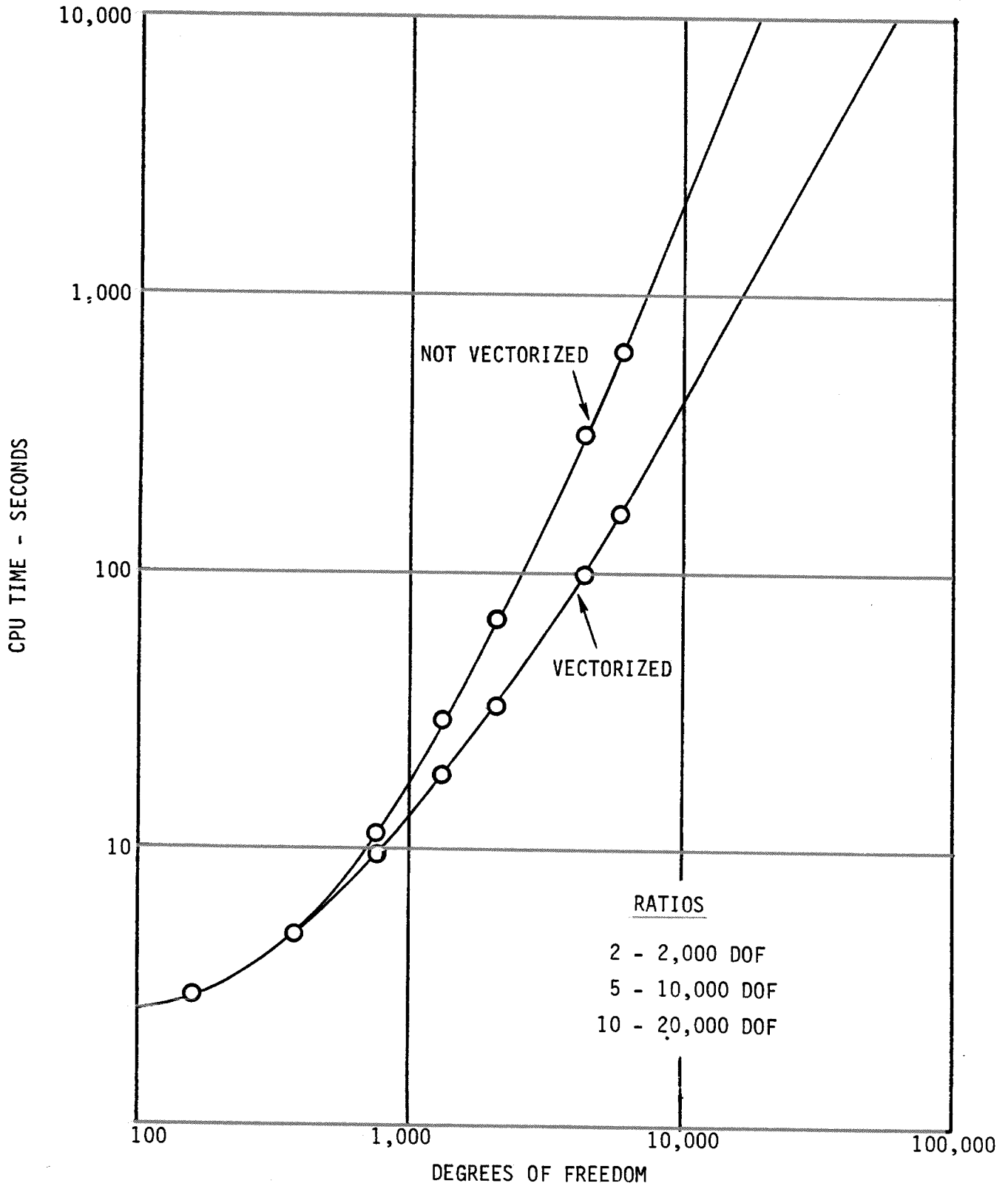
STATIC ANALYSIS



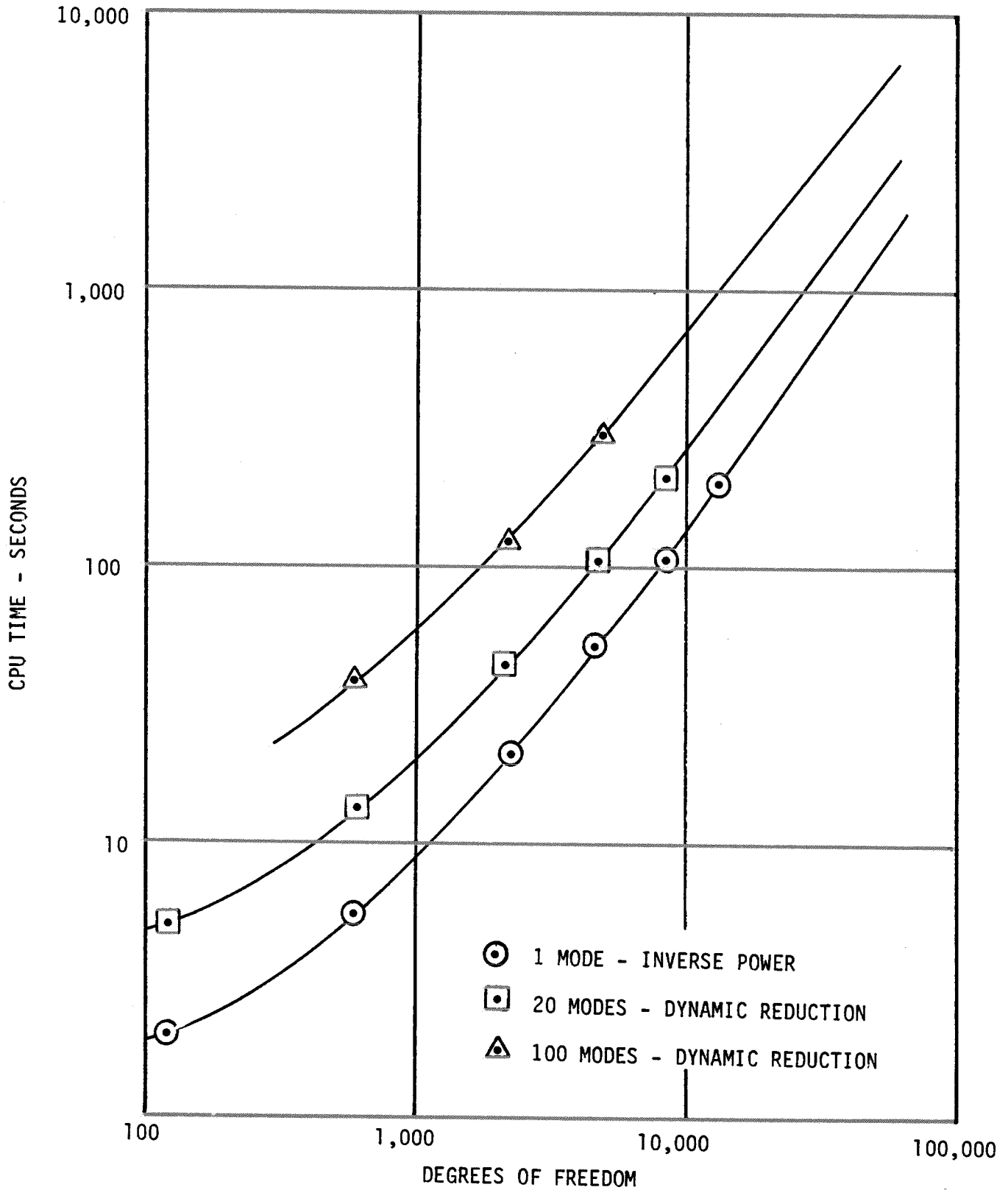
STATIC ANALYSIS - SQUARE PLATE



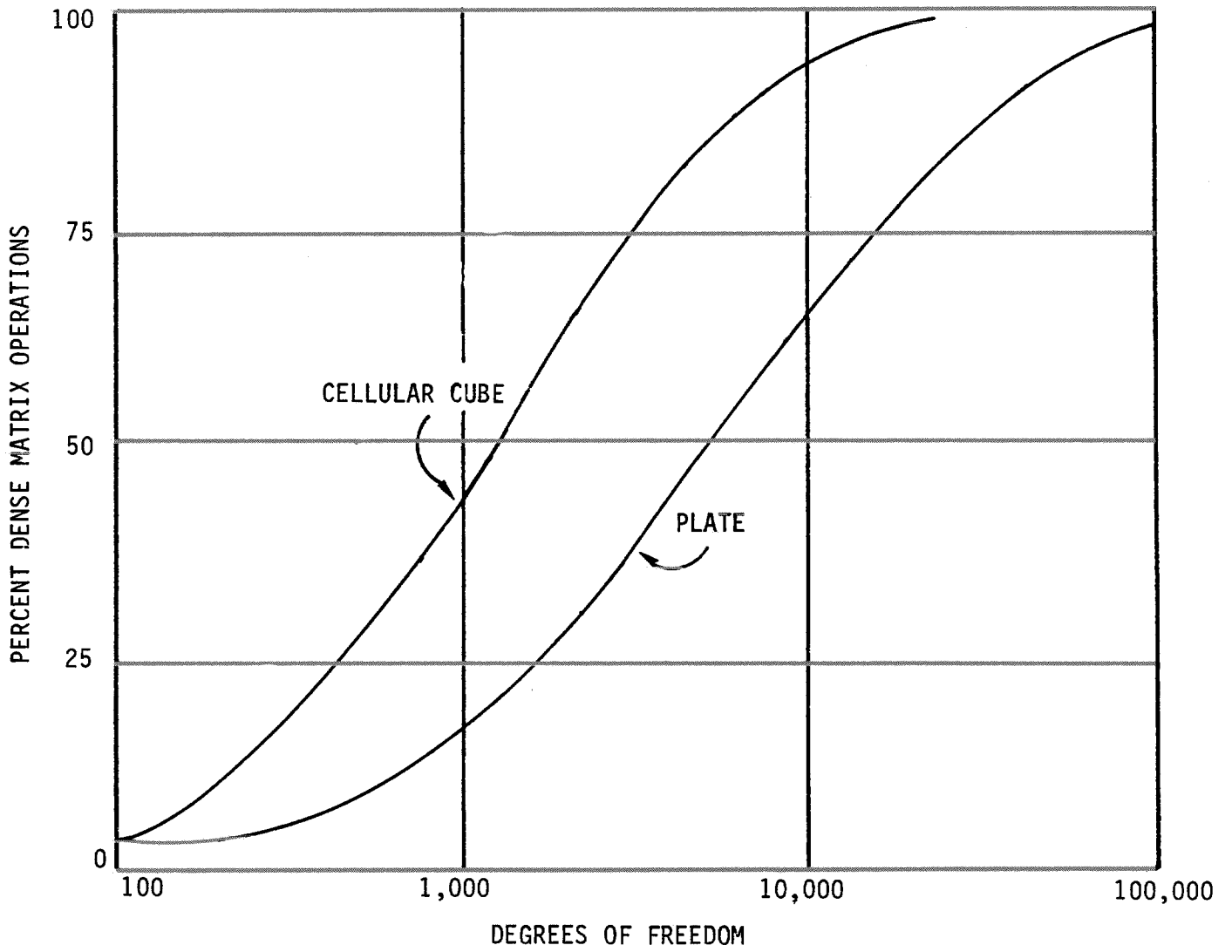
STATIC ANALYSIS - CELLULAR CUBE



NORMAL MODES - SQUARE PLATE



STATIC ANALYSIS NOT VECTORIZED



STATIC ANALYSIS NOT VECTORIZED

