

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

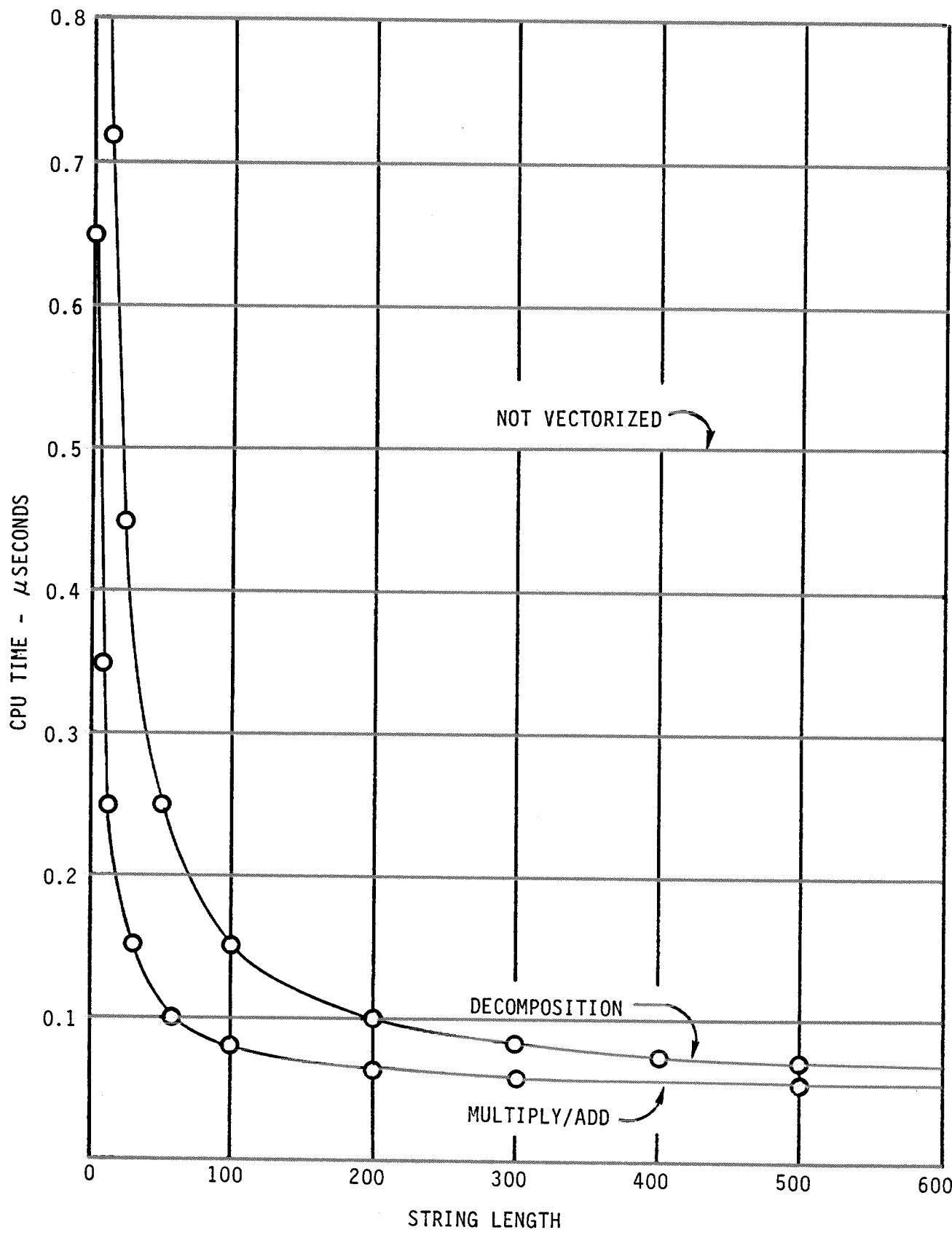
M = ARITHMETIC TIME FOR UNVECTORIZED MULTIPLY/ADD LOOP.

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

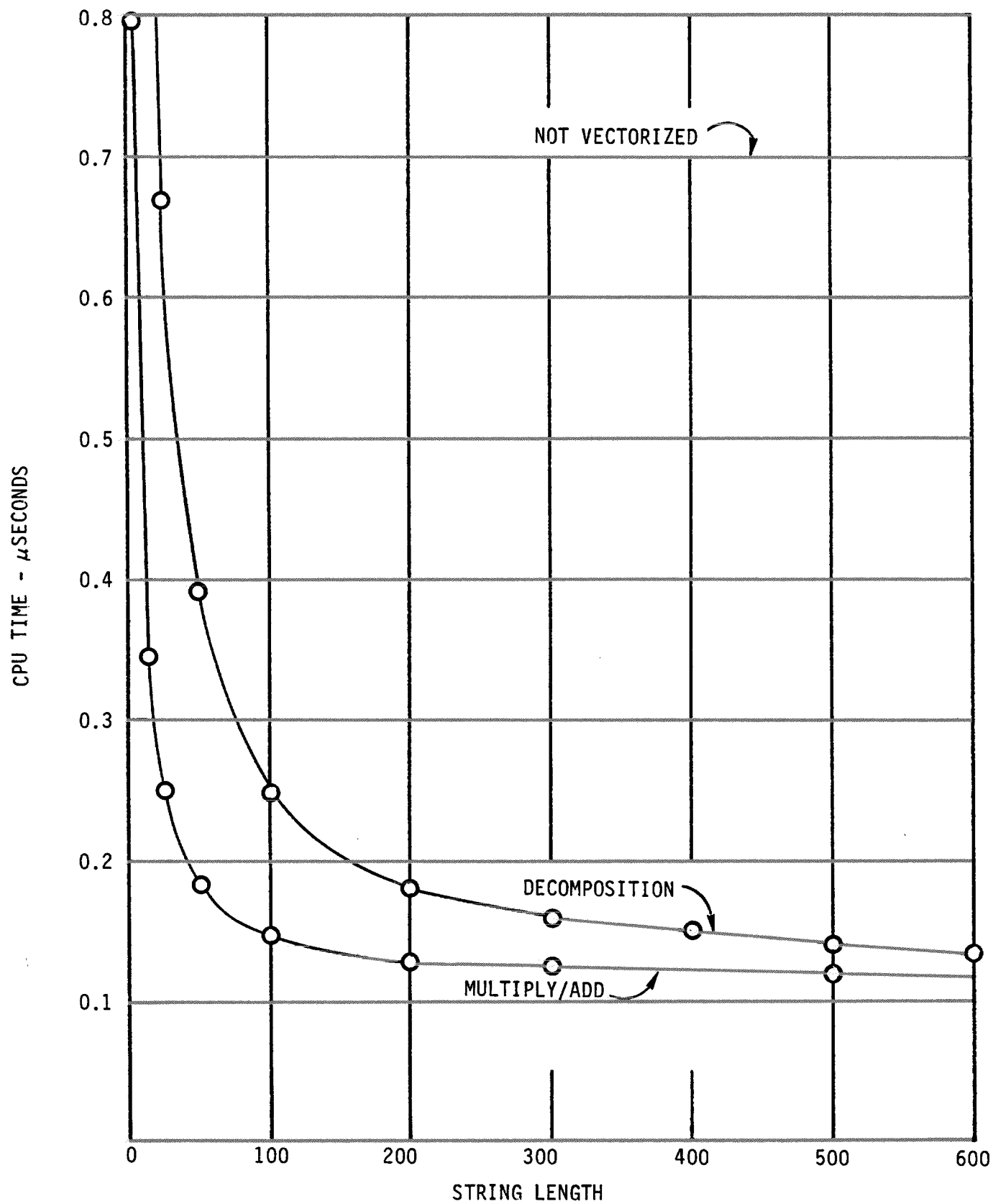
P = PACK OR UNPACK ONE ELEMENT IN A COLUMN OF A MATRIX.

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

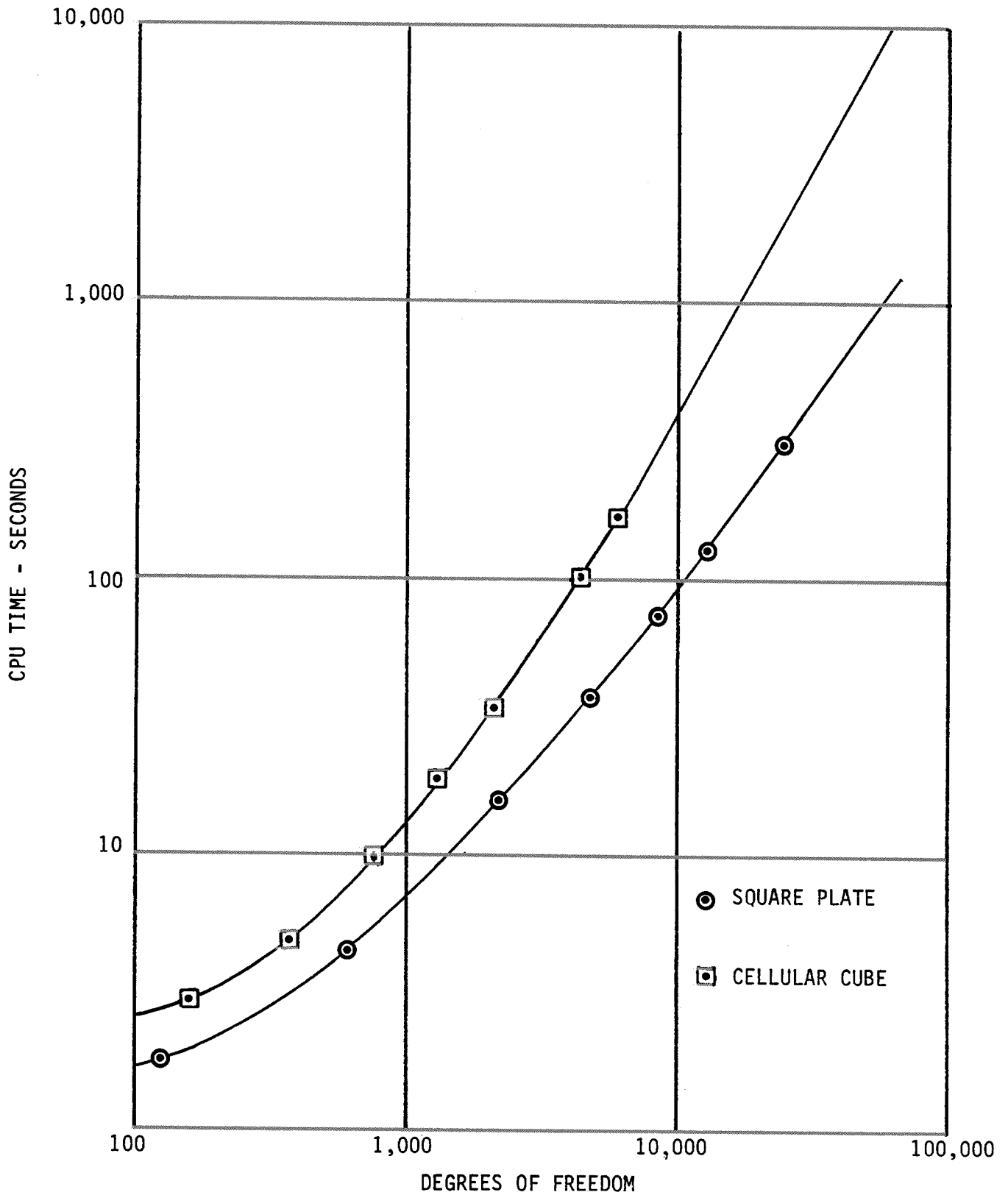
# ARITHMETIC TIMES - REAL VECTORIZED LOOPS



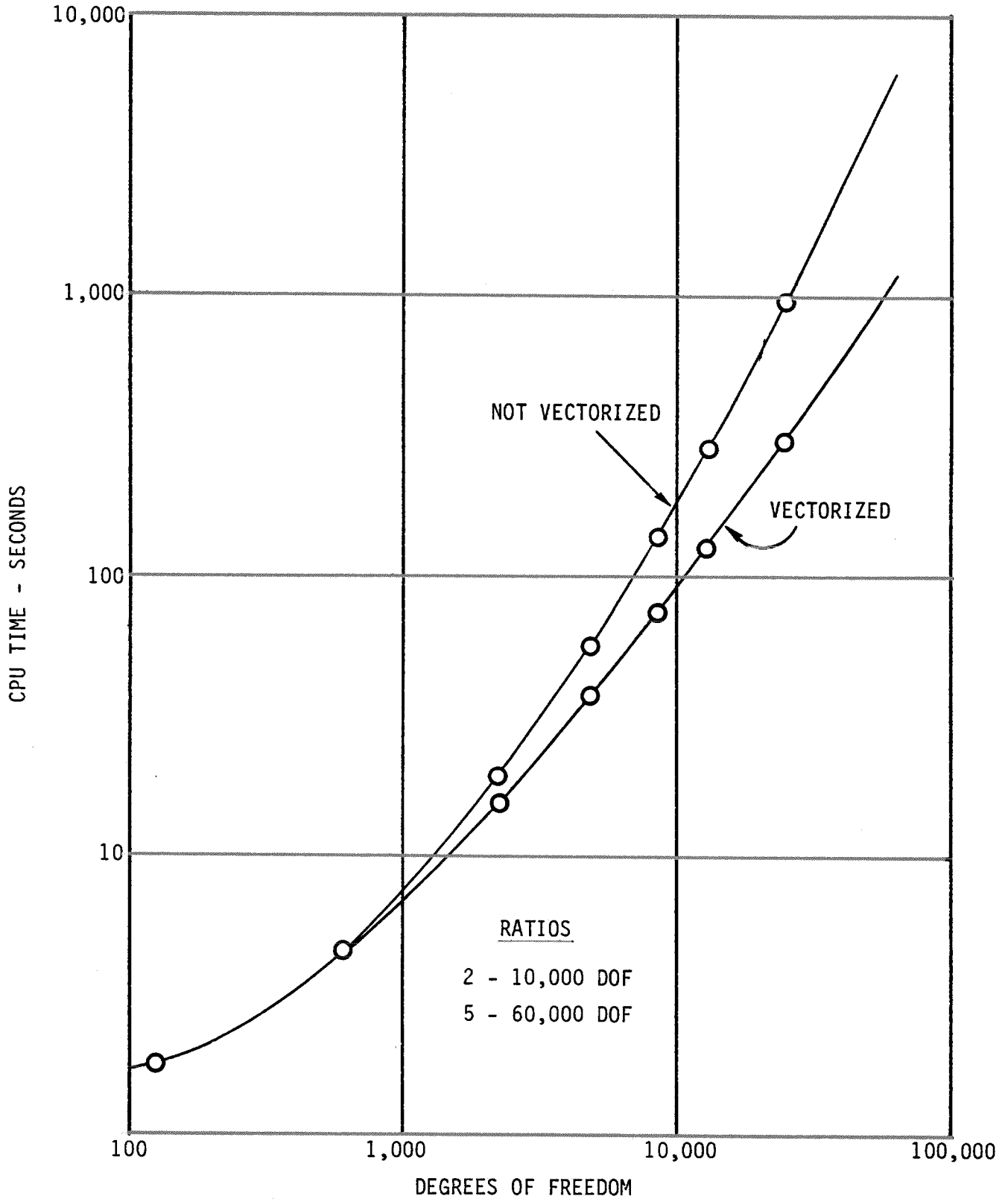
# ARITHMETIC TIMES - COMPLEX VECTORIZED LOOPS



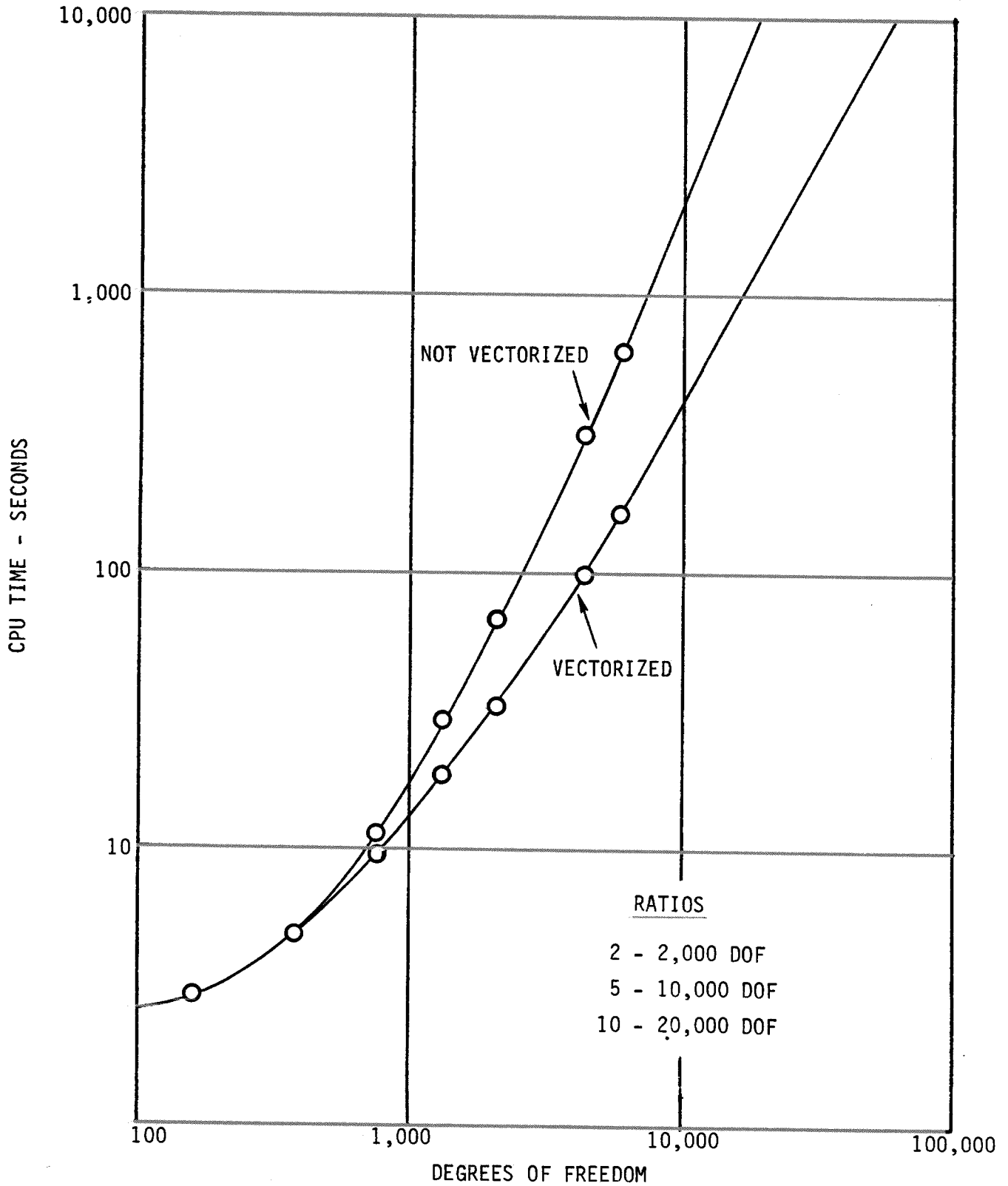
# STATIC ANALYSIS



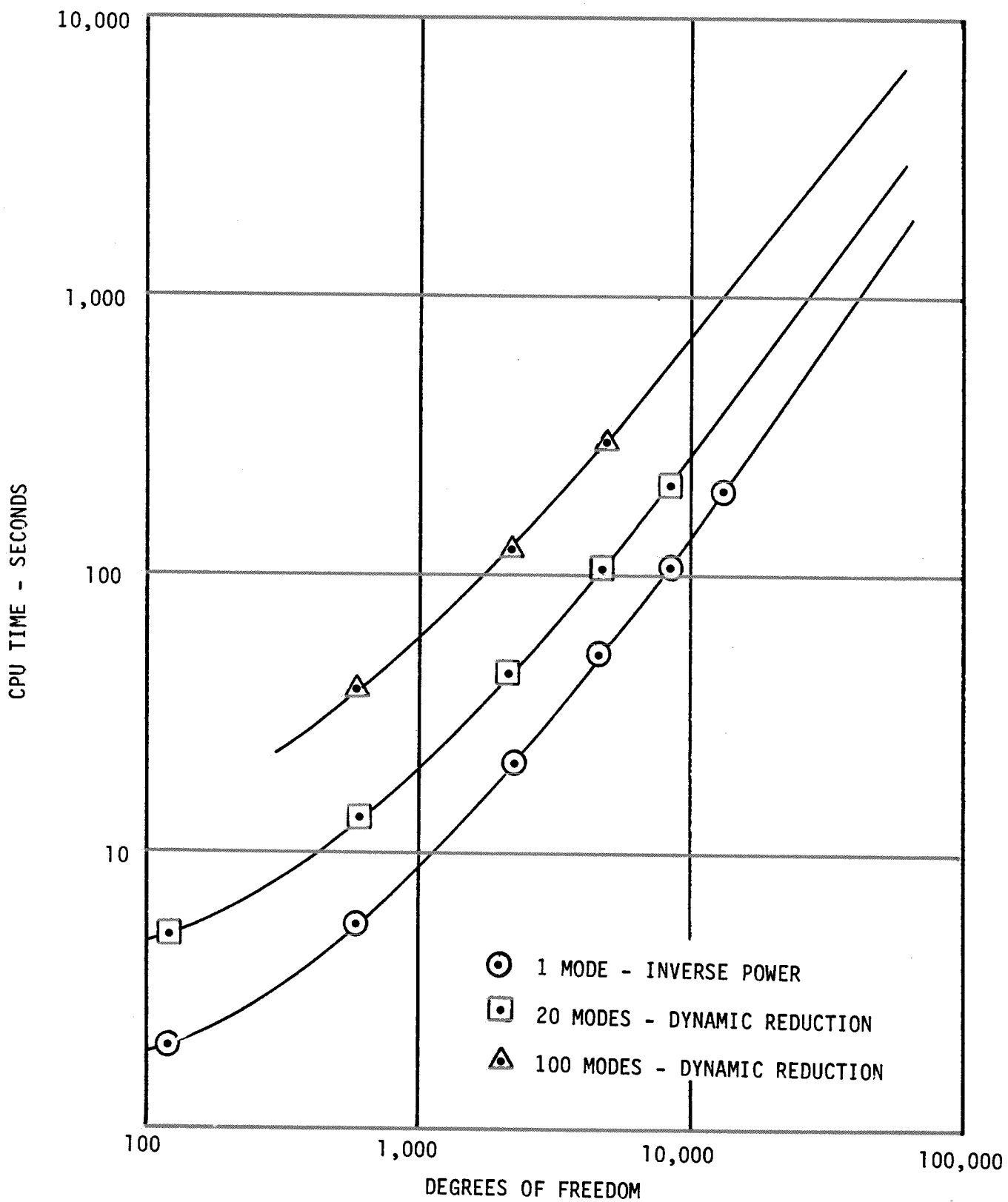
# STATIC ANALYSIS - SQUARE PLATE



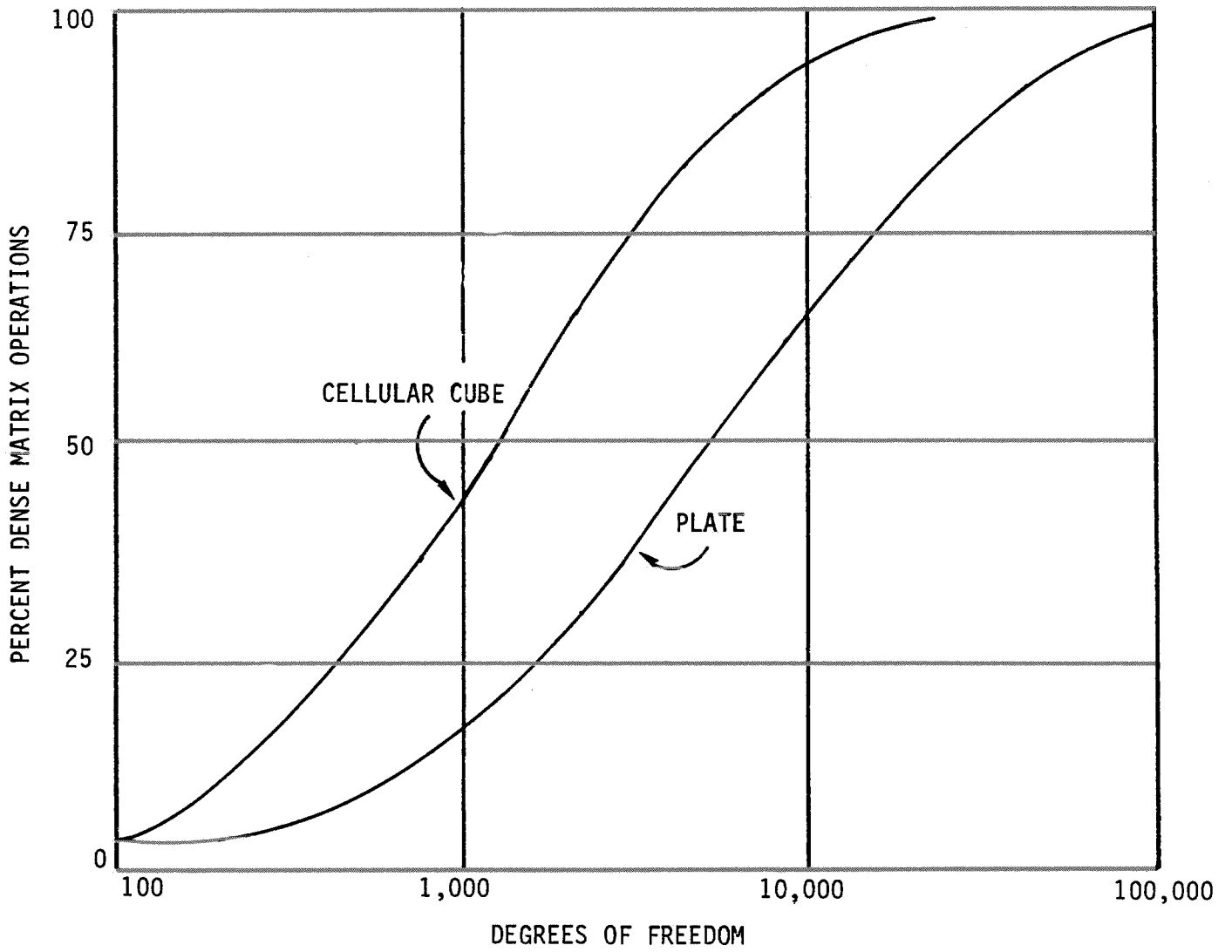
# STATIC ANALYSIS - CELLULAR CUBE



# NORMAL MODES - SQUARE PLATE



STATIC ANALYSIS NOT VECTORIZED



STATIC ANALYSIS NOT VECTORIZED

