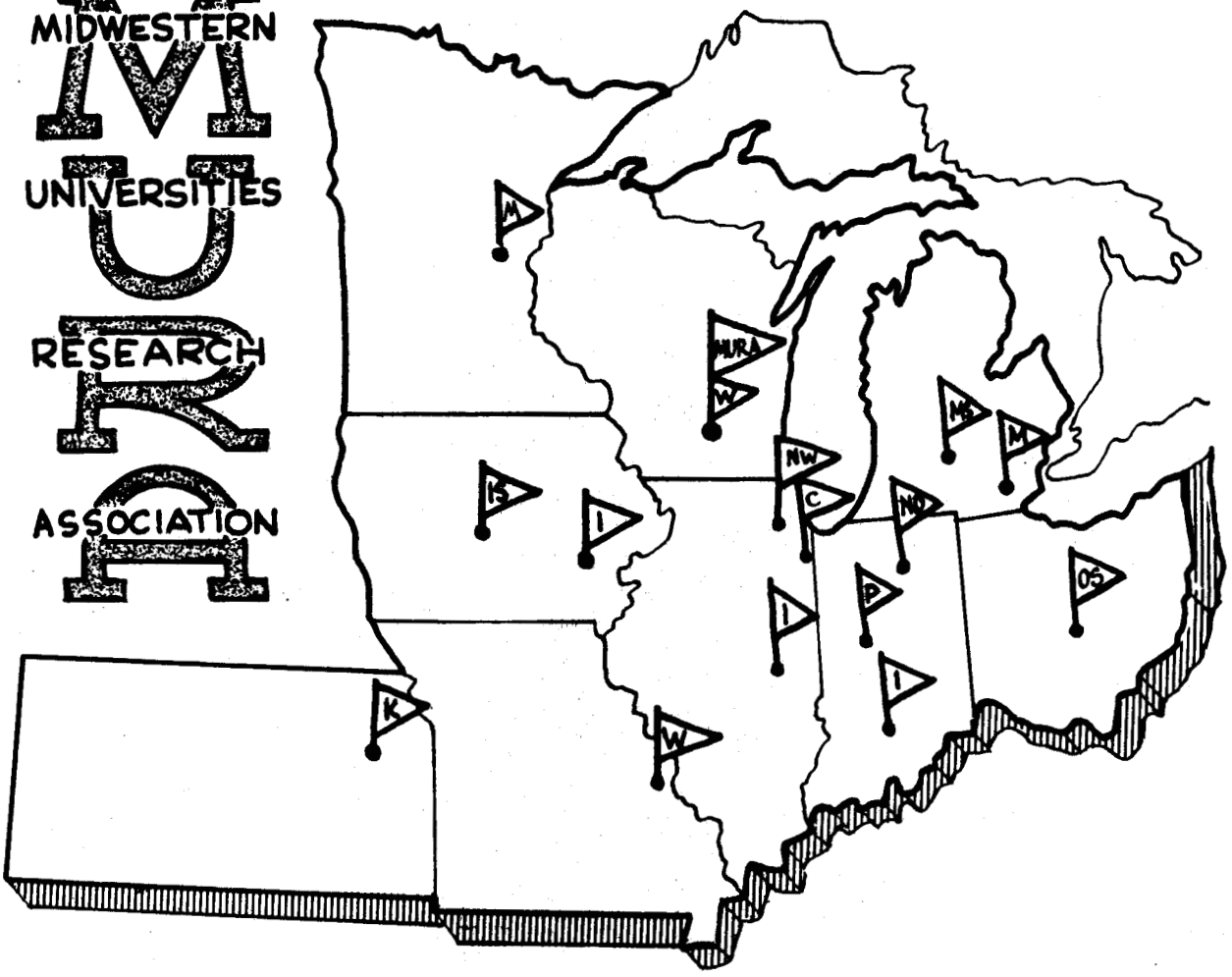
229

MIDWESTERN UNIVERSITIES RESEARCH ASSOCIATION



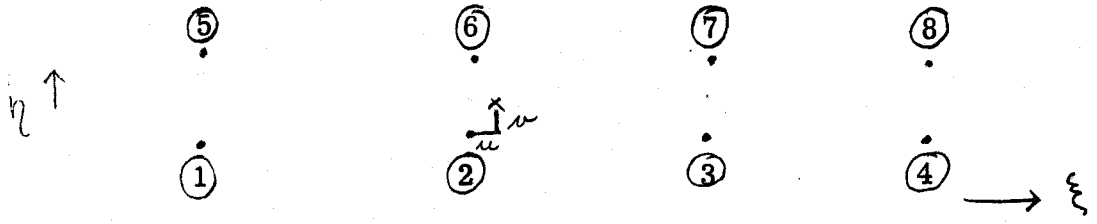
REPORT ATEMESH
(Program 53)
February-March, 1957

NUMBER 229
Internal
(IBM Program)

ATEMESH (Program 53)

J. N. Snyder

A program identical to FORMESH (Program 26) except an 8-point interpolation formula is used.



$$h = -\frac{u(1-u)(2-u)}{6} A + \frac{(1-u)(1+u)(2-u)}{2} B$$

$$+ \frac{u(1+u)(2-u)}{2} C - \frac{u(1-u)(1+u)}{6} D$$

where

$$A = ① + v\,[⑤ - ①]$$

$$B = \frac{v(1-v)(1+v)r^2}{6} ⑤ + v\left[1 - \frac{(1-v)(1+v)r^2}{3}\right] ⑥$$

$$+ \frac{v(1-v)(1+v)r^2}{6} ⑦ + \frac{v(1-v)(2-v)r^2}{6} ①$$

$$+ (1-v)\left[1 - \frac{v(2-v)r^2}{3}\right] ② + \frac{v(1-v)(2-v)r^2}{6} ③$$

$$C = \frac{v(1-v)(1+v)r^2}{6} ⑥ + v\left[1 - \frac{(1-v)(1+v)r^2}{3}\right] ⑦$$

$$\frac{v(1-v)(1+v)r^2}{6} ⑧ + \frac{v(1-v)(2-v)r^2}{6} ②$$

$$(1-v)\left[1 - \frac{(2-v)vr^2}{3}\right] ③ + \frac{v(1-v)(2-v)r^2}{6} ④$$

$$D = ④ + v\,[⑧ - ④]$$

where:

①, ②, ③, ④, ⑤, ⑥, ⑦, and ⑧ stand for field values at the indicated points. The same rule is used for each component of the field. r is the ratio of vertical to horizontal mesh size.

Invariants may still be computed.

ATEMESH AGENDUM (PROGRAM 53)

EMPLOYS FIELDS FROM FOROCYL NO.	

PARAMETER	ADDRESS	VALUE	REMARKS	
I. D.	7597			Integers
N_e	7598			
N_p	7599			
n_{RK}	7600			
m	7687		Needed only if N ≡ 0	
$(C_p)_o$	7588		(0)	
b_{PHONY}	7626			
p_{x_o}	7591			Fractions
p_{y_o}	7592			
x_o	7593			
y_o	7594			
$(N\Theta/2\pi)_o$	7580		(0)	
x_{max}	7595		(1/2)	
$P_{x_{max}} = P_{y_{max}}$	7596		(1×2^{-6})(Scale by 2^{-6})	
2^{m_h}	7624		Needed only if N ≡ 0	
HUMAN ID	7601			

"SEARCH" (Stop after first run that is stable through N_e steps) SS6 Up	
Is this the first of a series of runs?	
Is this a subsequent run in a series, referring to previous agenda?	

NOTES:

1. To omit any of the above parameters, simply leave its line blank.
2. The values given above in the remarks column are those which are entered if nothing is specified for them. Consequently, parameters having those values need not be entered by the data card. However, if some other value is desired, merely indicate it in its place.
3. A parameter once changed remains so in a series of runs, except that $(C_p)_o$ and $(N\Theta/2\pi)_o$ if set different from 0 must be so reset on each such run.
4. To submit a series of problems which differ only slightly, indicate "series" in the above box, and fill out one of these sheets for each separate problem. In this case it is not necessary to enter values other than those which differ from the preceding problem. Please staple the whole series securely together to form one entity.
5. If a series forms a "search" in the sense that the series is to be stopped after the first run which is stable through N_e steps, please check the box above; otherwise write nothing.
6. A box is provided for the mesh number.