

Zdeněk Hedrlín

On number of commutative mappings from finite set into itself (Preliminary communication)

Commentationes Mathematicae Universitatis Carolinae, Vol. 3 (1962), No. 1, 32

Persistent URL: <http://dml.cz/dmlcz/104907>

Terms of use:

© Charles University in Prague, Faculty of Mathematics and Physics, 1962

Institute of Mathematics of the Academy of Sciences of the Czech Republic provides access to digitized documents strictly for personal use. Each copy of any part of this document must contain these *Terms of use*.



This paper has been digitized, optimized for electronic delivery and stamped with digital signature within the project *DML-CZ: The Czech Digital Mathematics Library* <http://project.dml.cz>

ON NUMBER OF COMMUTATIVE MAPPINGS FROM FINITE SET INTO ITSELF

(Preliminary communication)

Zdeněk HEDRLÍN, Praha

Let F be a system of mappings from a finite set X into itself. Let the set X contain exactly n points, n a natural number. Then, evidently, the system F cannot contain more than n^n mappings.

Let us assume that every two mappings from F commute, that is $f \circ g = g \circ f$ for every $f, g \in F$, where by \circ we denote the composition of mappings. It can be proved that F does not contain more than $a(n)$ mappings, where

$$a(n) = 2^{n-1} \quad \text{for } n = 1, 2, \dots, 6,$$

$$a(n) = \max_{r=2, \dots, n-3} (n-r)^r + 1 \quad \text{for } n \geq 7.$$

On the other hand, there exists a commutative system G of mappings from X into X , such that G contains $a(n)$ mappings.

The proof of this assertion will be published in the Czech. Math. Journal.