6-6. Rotation schemes

EXAMPLE

FACT: Each of a graph gives rise to a collection of
And conversely:
Let and define by

Then traces out the

EXAMPLE
Let be a graph with

For each let

Let be a on of length

We say that is the at and the set of is called a

THEOREM Let be with notation as above. If is

In then this determines a

Conversely, determines

COROLLARY There exist exactly distinct

EXAMPLE
Proof (of Theorem) Given determine by

Then is a

For the converse, consider where
We first show that is a permutation of

(1) well-defined

(2) one-to-one

(3) onto
Thus is a and the action of on decomposes into subsets called (which partition ). We let each bound a

We have associated with each of a closed (which will become a region of this imbedding). We have entirely and consistently identified these along of This gives an imbedding of in

Claim that is, determines

(i) is since

(ii) is since

(iii) is since

(iv) is a (locally ). Three cases:

So where
Recall:

We can prove this fairly easily when \( \) and \( \) are both \( \) say that \( \) and \( \).

We show that

Proof: Since \( \) is \( \) so that \( \).

To show that \( \), we find \( \) with \( \).

Case 1

Case 2

Case 3

Case 4

Thus we have shown that \( \) for end of proof. NOTE: This is if we believe that equality holds in \( \) if and only if \( \).