

The fixed points of multimaps on surface with application to the torus- a Braid approach

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Let $\phi : S \rightarrow S$ be a n -valued continuous multimap on some compact surface S . First we classify the homotopy classes of multimaps where for most of the surfaces the classification is given in terms of the braids on n -strings of the surface S . Then we

give an algebraic criterion to decide which homotopy classes contains a multimap which is fixed point free. We will focus on the cases where S is a closed surface of Euler characteristic ≤ 0 . Despite the fact that the algebraic criterion is quite hard, we perform some specific calculations for the case where S is the torus. The concept of Nielsen number for a surface has been developed. Then I explain the status of the Wecken property for multimaps on the torus. In fact it is an open question if there is an example of a multimap which has Nielsen number zero but it can not be deformed to fixed point free. Finally a brief exposition about the case of the projective plane should be presented. Below are some of the relevant references for our purpose.

References

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