

COMPUTATIONS OF THE LEAST NUMBER OF PERIODIC POINTS OF SMOOTH BOUNDARY-PRESERVING SELF-MAPS OF SIMPLY-CONNECTED MANIFOLDS

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ABSTRACT. Let r be an odd natural number, M a compact simply-connected smooth manifold, $\dim M \geq 4$, such that its boundary ∂M is also simply-connected. We consider f , a C^1 self-maps of M , preserving ∂M . In [G. Graff and J. Jezierski, *Geom. Dedicata* 187 (2017), 241–258] the smooth Nielsen type periodic number $D_r(f; M, \partial M)$ was defined and proved to be equal to the minimal number of r -periodic points for all maps preserving ∂M and C^1 -homotopic to f . In this paper we demonstrate a purely combinatorial method of calculation of the invariant and illustrate it in various cases.

1. Introduction

Let $f: M \rightarrow M$ be a self-map of a simply-connected manifold and r be a given non-negative integer. The natural generalization of the classical Nielsen number is Nielsen periodic number of order r , which estimates the number of r -periodic points in the homotopy class of f (cf. [10]). The smooth branch of this theory, in which one considers smooth (i.e. C^1) map and smooth homotopies, differs very strongly from the continuous one. Roughly speaking, the smoothness

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