Codimension one coincidence indices

DONČO DIMOVSKI
Macedonian Academy of Sciences and Arts, and
Faculty of Natural Sciences and Mathematics,
"Ss. Cyril and Methodius" University, Skopje, R. Macedonia
donco@pmf.ukim.mk

Using the geometric description of spin manifolds and spin structures, a generalization of one-parameter fixed point indices is obtained for codimension one coincidences.

Let $F, G : X \to Y$ be PL maps where X and Y are closed, connected, spin PL manifolds, X is $(n+1)$-dimensional and Y is n-dimensional, and $n \geq 4$. A coincidence of F and G is a point $a \in X$ such that $F(a) = G(a)$. The set of all the coincidences is denoted by $Coin(F, G)$. For a family V of isolated circles of coincidences of F and G, two indices are defined: $ind_1(F, G; V)$ - which is an element in the first homology group $H_1(E)$, where E is the space of paths in $X \times Y$ from the graph of F to the graph of G; and $ind_2(F, G; V)$ - which is an element in the group 9_2 with two elements.

Theorem. *For a family V of isolated circles of coincidences of F and G in the same coincidence class there is a neighborhood N of V and a homotopy from F to H rel $X \setminus N$ such that $Coin(H, G) = Coin(F, G) \setminus V$ if and only if $ind_1(F, G; V) = 0$ and $ind_2(F, G; V) = 0$.*