# Codimension one coincidence Indices for spin $PL$ manifolds

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Using the results and techniques about one-parameter fixed point theory from [3], one-parameter fixed point indices from [1], and the geometric description of spin manifolds and spin structures based on [2], two indices for codimension one coincidences are defined, as follows. Let $F$, $G : X \to Y$ be $PL$ maps where $X$ and $Y$ are and spin, closed, connected $PL$ manifolds, $X$ is $(n+1)$-dimensional and $Y$ is an $n$-dimensional, $n \geq 5$. A coincidence of $F$ and $G$ is a point a $X$ 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 $G$, we define two indices: $ind_1(F, G; V)$ - 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 $\mathbf{Z}_2$ with two elements. We prove that 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 $X\backslash N$ such that $Coin(H, G) = Coin(F, G)\backslash V$ if and only if $ind_1(F, G; V) = 0$ and $ind_2(F, G; V) = 0$.

## References

[1] D. Dimovski, *One-parameter fixed point indices*, Pacif. J. of Math., Vol. 161. No. 2, 1994, 263–297.

[2] D. Dimovski, *Canonical Embeddings of $S^1 \times \Delta^{n-1}$ into orientable n-dimensional closed PL manifolds for* $n > 4$, Top. And its Applic., Volume 160, Issue 17, 2013, 2141–216.

[3] D. Dimovski, R. Geoghegan, *One-parameter Fixed Point Theory*, Forum Math. 2, 1990, 125–154.

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