Topological **M**ethods in **N**onlinear **A**nalysis
Journal of the Juliusz Schauder Center
Volume 12, 1998, 375–386

THE COINCIDENCE REIDEMEISTER CLASSES OF MAPS ON NILMANIFOLDS

Daciberg L. Gonçalves

Introduction

Given a pair of maps $f, g : N_1 \to N_2$ where N_1, N_2 are compact nilmanifolds of the same dimension, in [15], C. K. McCord has very recently shown that $N(f,g) = |L(f,g)|$ where $N(f,g), L(f,g)$ mean the coincidence Nielsen number and Lefschetz coincidence number, respectively. Furthermore, he has also shown that the essential coincidence Nielsen classes have the same coincidence index which is either $+1$ or -1. In the fixed point situation, or even more general in the coincidence case where $N_1 = N_2$, several authors have exploited the relation among $N(f,g), L(f,g)$, $\operatorname{coin}(f_\#, g_\#)$ and $R(f,g)$, where $f_\#$, $g_\#$ are the induced homomorphisms on the fundamental group by f, g, respectively, and $R(f,g)$ is the Reidemeister coincidence number. See for example [2], [7] and [8]. For the general situation $f, g : N_1 \to N_2$, the main part which is missing so far is the relation between $\operatorname{coin}(f_\#, g_\#)$ and $R(f,g)$. The purpose of this work is first to study such relation including the case where the two compact nilmanifolds N_1 and N_2 do not have the same dimension. Finally, to study $\operatorname{coin}(f,g)$ for $g = c$ the constant map, where the two compact nilmanifolds N_1 and N_2 do not have necessarily the same dimension. Then we prove:

1991 *Mathematics Subject Classification.* Primary 55M20; Secondary 54H25.
Key words and phrases. Nielsen number, Lefschetz number, coincidene, nilmanifold, Lie group.