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Enric Ventura* (enric.ventura@upc.edu), Av. Bases de Manresa 61-73, 08242 Manresa, Barcelona, Spain. *Membership in the BNS invariant.*

Given a finitely generated group G , $\Sigma^1(G)$ denotes the Bieri–Neumann–Strebel invariant of G , a certain open subset of the unit sphere which has some interesting information about abelian quotients of G and their kernels. By analyzing semidirect products of the form $G_\alpha = G \rtimes_\alpha Z$, specially with defining automorphisms α with no non-trivial fixed points at the abelianization level, we obtain the following unsolvability result: there exists no algorithm to decide, given a finite presentation of a group G and given a rational point in the sphere, whether the point belongs to $\Sigma^1(G)$. (Received February 02, 2015)