

Speaker: **Heath, Philip**

Title: *Model solvmanifolds for Neilson theory*

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Abstract: Existing examples of solvmanifolds (quotients of connected simply connected solvable Lie groups by uniform subgroups), and their maps, seem to be sparse, to say the least. Nilmanifolds (quotients of connected simply connected nilpotent Lie groups by uniform subgroups), on the other hand, are known to be homeomorphic to subgroups of unipotent matrix groups. Furthermore, homotopy classes of self maps of nilmanifolds are also in one-to-one correspondence with the homomorphisms of these subgroups and the Nielsen theory (both ordinary and periodic) is the same as the basic matrix Nielsen theory of tori. Thus this latter class of spaces, serves as models for nilmanifolds and their maps.

In contrast, the construction of and analysis of self maps of solvmanifolds is far more complicated than for nilmanifolds, and there seems to be no corresponding models for solvmanifolds. The purpose of this talk is to give the next best thing, at least as far as Nielsen theory is concerned. Accordingly, we construct a class of solvmanifolds (which we call *models*) and their maps. These models, unlike arbitrary solvmanifolds, exhibit a simple necessary and sufficient condition for the existence of self maps. They not only give a rich source of examples of solvmanifolds, but also serve as paradigms for the Nielsen theory of solvmanifolds in the sense that, for any self map $f : S \rightarrow S$ of an arbitrary solvmanifold S , there is an easily constructed (often simpler) solvmanifold S' , and an often simpler self map f' of S' that has the same Nielsen theory (ordinary and periodic) as f .

The talk will contain illustrative examples.