Séminaire Itinérant de Catégories
à Louvain-la-Neuve, le 31 octobre 2015
Programme

9: **00** A. Montoli, « De quoi un idéal est-il la classe de zéro ? »

10: **00** *Pause café*

10: **30** G. Metere, « Normal monomorphisms in Mal'tsev regular categories »
11: **30** T. Van der Linden, « Qu'est-ce *l'admissibilité* de Nelson Martins-Ferreira ? »

12: **30** *Déjeuner*

Giuseppe Metere (Palermo) *Normal monomorphisms in Mal'tsev regular categories*
In [B], Bourn introduces a notion of normal monomorphisms that objectifies an equivalence class of an internal equivalence relation. Although the definition is given the fairly general setting of a category with finite limits, later investigations on this subject often focus on protomodular contexts, where normality becomes a property.

In my talk, I will try to clarify some connections between internal equivalence relations and normal monomorphisms in regular Mal'tsev categories, whereas a full description is achieved for quasi-pointed regular Mal'tsev categories.

[B] D. Bourn, Normal subobjects and abelian objects in protomodular categories, J. Algebra **228** (2000).

Andrea Montoli (Coimbra) *De quoi un idéal est-il la classe de zéro ?*
Nous caractérisons, dans les catégories pointées régulières, les idéaux comme les classes de zéro des relations surjectives. En plus, nous étudions une variation de la condition *Smith is Huq* : deux relations surjectives scindées à gauche commutent si et seulement si leurs classes de zéro commutent.

Travail en collaboration avec Nelson Martins-Ferreira, Aldo Ursini and Tim Van der Linden.

Tim Van der Linden (UCL) *Qu'est-ce* l'admissibilité *de Nelson Martins-Ferreira ?*
In his Ph.D. thesis [3], Nelson Martins-Ferreira introduced a technical condition (for a certain type of diagram in a category) which he called *admissibility*. His first aim was to efficiently describe internal categorical structures, but the flexibility of the condition allowed him to use it for expressing commutativity conditions as well.

Admissibility allowed us to conveniently describe the so-called *Smith is Huq* condition [5, 2] and its close relationship with weighted commutativity [1, 6]. We were, however, not entirely happy to be using a pure technical definition which at first sight does not seem to have a conceptual meaning. Clearly it should model *commuting* in some sense, but *for which kind of objects ?*

The aim of my talk is to explain that admissibility is indeed a commutativity condition, namely for the same objects that answer the question raised in Andrea's talk and in the preprint [4].

[1] M. Gran, G. Janelidze, and A. Ursini, *Weighted commutators in semi-abelian categories*, J. Algebra **397** (2014), 643–665.
[2] M. Hartl and T. Van der Linden, *The ternary commutator obstruction for internal crossed modules*, Adv. Math. **232** (2013), no. 1, 571–607.
[3] N. Martins-Ferreira, *Low-dimensional internal categorical structures in weakly Mal'cev sesquicategories*, Ph.D. thesis, University of Cape Town, 2008.
[4] N. Martins-Ferreira, A. Montoli, A. Ursini, and T. Van der Linden, *What is an ideal a zero-class of ?*, Pré-Publicações DMUC **15-05** (2015), 1–14.
[5] N. Martins-Ferreira and T. Van der Linden, *A note on the "Smith is Huq" condition*, Appl. Categ. Structures **20** (2012), no. 2, 175–187.
[6] N. Martins-Ferreira and T. Van der Linden, *A decomposition formula for the weighted commutator*, Appl. Categ. Structures **22** (2014), 899–906.
