

## MINI-COURSES

*Friday 25 – Wednesday 30 June 2010*

### FUNCTORS ASSOCIATED TO BISETS

*Serge Bouc, Amiens*

An introduction to the theory of *biset functors*. The example of group representations will motivate the study of these objects. After a recall of basic notions regarding biset functors, a few results on *simple functors* will be presented. Various aspects of the *Burnside functor* will then be discussed. We also will consider the *p-functors*, and their applications, such as *rational representations of p-groups*, or the *Dade group of endo-permutation modules*. A few open problems will also be discussed.

### FINITE *p*-GROUPS IN REPRESENTATION THEORY

*Nadia Mazza, Lancaster*

We will survey some basics on *finite p-groups*, including the *Lazard correspondence*, which links the *Lie ring* associated to a finite *p*-group and the *p*-group itself. Hence, we will focus on the structure of the *poset of the elementary abelian subgroups* (also called *Quillen category*) inside a given finite *p*-group, as these subgroups are ubiquitous. The zenith of the course consists in a few applications of the above theory and related open problems, in group theory and their representations, e.g. *soft subgroups*, *class-breadth conjecture*, and *endotrivial modules*.

## Program for the short courses, June 25-June 30 2010

**Nadia Mazza: Finite  $p$ -groups in representation theory**

(Assistant: Jean-Baptiste Gramain)

**Serge Bouc: Functors associated to bi-sets**

(Assistant: Guodong Zhou)

	Friday	Monday	Tuesday	Wednesday
8h15-10h00	-	Bouc	Mazza	Bouc
10h15-11h00	-	exercises (Bouc)	exercises (Mazza)	Bouc
11h15-12h00	-	exercises (Bouc)	exercises (Mazza)	exercises (Bouc)
13h15-15h00	Bouc	Mazza	Bouc	Mazza
15h15-16h00	Mazza	Mazza	Bouc	Mazza
16h15-17h00	Mazza	exercises (Mazza)	exercises (Bouc)	exercises (Mazza)
17h15-18h00	exercises (Mazza)	-	exercises (Bouc)	