NON ABELIAN TENSOR PRODUCT OF RESTRICTED LIE SUPERALGEBRAS

Pilar Páez-Guillán
University of Santiago de Compostela
pilar.paez@usc.es

A restricted Lie superalgebra over a field $\mathbb{K}$ of characteristic $p > 0$ is a Lie superalgebra $L = L_{\overline{0}} \oplus L_{\overline{1}}$ with an additional map ${}^{[p]}\colon L_{\overline{0}} \longrightarrow L_{\overline{0}}$, called p-map, which verifies the following conditions

$$(ax)^{[p]} = a^p x^{[p]},$$

$$(x+y)^{[p]} = x^{[p]} + y^{[p]} + \sum_{i=1}^{p-1} s_i(x,y),$$

$$\mathrm{ad}(x^{[p]})(z) = \mathrm{ad}^p(x)(z),$$

for $x, y \in L_{\overline{0}}$, $z \in L$, $a \in \mathbb{K}$, and being $is_i(x,y)$ the coefficient of ξ^{i-1} en $\mathrm{ad}^{p-1}(\xi x + y)(x) \in M[\xi]$, for $1 \leq i \leq p-1$.

In this talk, we will follow the steps given for Lie algebras ([1]), restricted Lie algebras ([3]) and Lie superalgebras ([2]), and define a non abelian tensor product for two restricted Lie superalgebras acting on each other. We will present it as a quotient of a particular free restricted Lie superalgebra; it can also be seen as a functor between a category of pairs of Lie superalgebras acting on each other, and the one of restricted Lie superalgebras. Moreover, we will analyse its connection with the usual tensor product of the underlying spaces, as well as its applications to central extensions of restricted Lie superalgebras.

The author is supported by the project MTM2016-79661-P of the Ministerio de Economía y Competitividad (Spain), European FEDER fund included.

REFERENCES:

1. G. J. Ellis. *A nonabelian tensor product of Lie algebras.* Glasg. Math. J. **33** (1991) 101-120.

2. X. García-Martínez, E. Khmaladze, M. Ladra. *Non-abelian tensor product and homology of Lie superalgebras.* J. Algebra **440** (2015) 464-488.

3. R. Kurdiani. *Non-abelian tensor product of restricted Lie Algebras.* Bull. Georgian Acad. Sci. **164** (2001) 32-34.