

# $s$ -homogeneous algebras and $s$ -homogeneous triples

Y. Volkov

This talk is based on a joint work with Eduardo Marcos. It is devoted to so-called  $s$ -homogeneous algebras, i.e. algebras of the form  $kQ/I$ , where  $Q$  is some finite quiver and  $I$  is an ideal generated by linear combinations of paths of length  $s$ . Thus, in the case  $s = 2$  we obtain the notion of a quadratic algebra. Mainly we consider the case  $s \geq 3$ , though our methods can be applied for quadratic algebras.

To study  $s$ -homogeneous algebras we will introduce the category of  $s$ -homogeneous triples and the category of quivers with  $s$ -homogeneous corelations. We will show that all of these categories are equivalent to the category of  $s$ -homogeneous algebras as well as the category of quivers with  $s$ -homogeneous relations. We will state some facts about these categories and their objects. We will apply our results to the classification of  $s$ -Koszul algebras over a field in the cases of one relation and of one dimensional  $s$ -th component. Finally, we will start to develop the cases of two relations and of two dimensional  $s$ -th component.