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*Graded algebras and quadratic forms*

In the study of group gradings on semisimple associative and Lie algebras over the fields of complex and real numbers, there appear some geometric structures on finite abelian groups, for example quadratic and alternating bilinear forms on elementary abelian 2-groups, which can be regarded as vector spaces over the field of size 2. In this talk, based on a joint work with Alberto Elduque and Adrián Rodrigo-Escudero, we will consider the case of associative algebras with involution and explain how such structures appear and what role they play in the classification of gradings.