

## Tits-Kantor-Koecher Lie Algebras and 5 x 5-Gradings

*lundi 11 décembre 2023 17:00 (50 minutes)*

The classical Tits-Kantor-Koecher construction produces a Lie algebra starting from a Jordan algebra; the resulting Lie algebra is 3-graded. This can be generalized to other algebraic structures as input, giving rise to 5-graded Lie algebras.

From a completely different point of view, Tits and Weiss have developed algebraic structures that parametrize spherical buildings associated with isotropic simple linear algebraic groups; the most complicated of those are the “quadrangular algebras” introduced by Weiss.

We combine both ideas, and we show that Lie algebras equipped with two different 5-gradings give rise, under some natural conditions, to quadrangular algebras.

This is based on joint work with Jeroen Meulewaeter.

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