

# Composition algebras and some of their connections

**Seidon Alsaody**

Chalmers University of Technology and the University of Gothenburg,  
Sweden

A composition algebra is an algebra over a field, not necessarily associative or commutative, endowed with a multiplicative non-degenerate quadratic form. Classical examples include quaternion and octonion algebras. Although finite-dimensional composition algebras only exist in dimension 1, 2, 4 and 8, their classification problem is far from being solved. They have connections to a number of areas in algebra, such as automorphisms of affine group schemes, representations of Lie algebras, matrix factorizations, and quantum groups. I will give an overview of some recent results on the classification of composition algebras and a glimpse into some of their connections.