Hermann Hähl:

Lie algebras of associative quadratic algebras

Associative quadratic algebras have been classified under the name of kinematic algebras by L. Bröcker (1973) and Karzel (1973) in a geometric context and with the help of geometric methods. In the talk, another access will be presented. Its starts from the fact that the hyperplane of vectors in an associative quadratic algebra is a Lie algebra endowed with a certain symmetric bilinear form (,) (which incidentally is a multiple of the Killing form), a so-called vector algebra. The vector algebras of associative quadratic algebras are characterized by the identities $([v,u],w) = -(u,[v,w])$ and $[[w,u],v] = (u,v)w - (v,w)u$. These were formulated by Plebański and Przanowski (1988) for real and complex algebras and used for a classification of all such vector algebras. This can be generalized to arbitrary base fields and much simplified at the same time (joint work with M. Weller).