Associative Subalgebras of Majorana Algebras

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A *Majorana algebra* is a commutative nonassociative real algebra generated by a finite set of idempotents, called *Majorana axes*, that satisfy some of the properties of the $2A$-axes of the Monster Griess algebra. The term was introduced by A. A. Ivanov (2009) inspired by the work of S. Sakuma and M. Miyamoto. In this talk, we are going to revisit, in the context of Majorana theory, the theorem of Mayer and Neutsch (1993) that states that any maximal associative subalgebra of the Griess algebra has an orthogonal basis of indecomposable idempotents that add up to the identity. We apply this result to determine all the maximal associative subalgebras of some low-dimensional Majorana algebras; namely, the two-generated Majorana algebras and the Majorana representations of S_4 involving $3C$-algebras.