

On Morphisms of Finite Dimensional Absolute Valued Algebras

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Abstract

Absolute valued algebras are non-zero real algebras (not assumed to be associative) endowed with a multiplicative norm. In the finite dimensional case, Albert (1947) showed that they exist only in dimensions 1, 2, 4 and 8; these algebras are division algebras, and have been classified up to dimension 4, for which cases the automorphism groups are known as well. Morphisms of finite dimensional absolute valued algebras are injective and respect the norm.

In this talk we describe the morphisms to four dimensional absolute valued algebras. We see that for absolute valued algebras A and B with B four dimensional, the set of morphisms from A to B is either finite with cardinality at most 6, or described by \mathbb{S}^1 or \mathbb{S}^2 . We will comment on irreducibility, and for morphisms from two dimensional algebras, we also describe their orbits under the action of the two automorphism groups involved.