

A complete characterisation of algebraic number fields using Cartan pairs

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Given any two rings of algebraic integers, Li and Lück proved that the associated ring C^* -algebras are always isomorphic. I will present a result showing that—in stark contrast with the result by Li and Lück—given any two such rings, there is a Cartan-preserving isomorphism between the ring C^* -algebras if and only if the rings are isomorphic. As a consequence of this result, the semigroup C^* -algebra of the (full) $ax+b$ -semigroup over a ring of algebraic integers together with its canonical Cartan subalgebra completely characterises the ring. This is joint work with Xin Li (University of Glasgow).