# Simplicity of inverse semigroup algebras – a question of Munn

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Inverse semigroups abstract $*$-semigroups of partial isometries of a Hilbert space and Lie pseudogroups of partial homeomorphisms of a topological space. In recent years, representations of inverse semigroups have become important, in part because many natural arising $C^*$-algebras and rings are generated by inverse semigroups, the most prominent examples being graph $C^*$-algebras and their ring theoretic analogues, Leavitt path algebras.

In the 1970s, Munn raised the question of characterizing when the algebra of an inverse semigroup over a field is simple. He gave some necessary conditions and some sufficient conditions, and constructed a number of interesting examples which years later turned out to be special cases of Leavitt path algebras and Nekrashevych algebras of self-similar groups. Nonetheless, Munn was unable to answer this question.

In this talk, we answer Munn's question with a brief excursion into topological groupoids. This is joint work with Nora Szakács.

## References

[1] STEINBERG, BENJAMIN AND SZAKÁCS, NORA, *Simplicity of inverse semigroup and étale groupoid algebras*, Advances in Mathematics, **380**, 107611 (2021)