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**Jon Brown, Gabriel Nagy** and **Sarah A. Reznikoff\***, sarah@ksu.edu, and **Aidan Sims** and **Dana Williams**. *Cartan subalgebras of groupoid  $C^*$ -algebras*.

The classical uniqueness theorems for representations of combinatorially defined  $C^*$ -algebras demand either gauge invariance of the representation or aperiodicity of the underlying structure. Over the last five years an approach that relies on neither of these conditions has been developed. In particular, we have identified a special subalgebra in a graph,  $k$ -graph, or groupoid algebra that captures failure of aperiodicity in the underlying structure and in turn reflects failure of injectivity in the representation. Moreover, whether this subalgebra is Cartan depends on an interesting topological condition of the underlying combinatorial structure. (Received September 22, 2015)