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*Classifying right-angled Artin semigroup  $C^*$ -algebras.*

The right-angled Artin groups and semigroups are defined from undirected graphs by associating one generator to each vertex, and imposing commutativity on pairs of generators exactly when they are connected by edges. In a completely similar vein, one can study operators on Hilbert spaces which are required to commute according to data arising from the graph, and recent insight has clarified the sense in which the latter such definition is founded on the second in the semigroup case.

Employing classification theory for non-simple  $C^*$ -algebras, we have obtained a complete description of these *right-angled Artin semigroup  $C^*$ -algebras* by their  $K$ -theory, which reflects the geometry of the graph through the Euler characteristic. Among many other things, this leads to surprisingly strong results on the stability of some such operators, showing that if a family of operators satisfy the relevant relations up to a small error, then they can be perturbed a bit to obtain an exact match. (Received September 07, 2014)