

Jack Spielberg

From left cancellative small categories to C^* -algebras, with examples

Many kinds of oriented combinatorial object have been used to define C^* -algebras; we mention directed graphs, higher rank graphs, ordered groups, left cancellative monoids, left cancellative small categories, 0-left cancellative semigroups, semigroupoids (and surely we have omitted some). The construction of a C^* -algebra from such an object has typically followed one of two paths. The first method is to identify (or guess) a set of generators and relations reflecting the object. These were obvious for the first examples (I am thinking of the Cuntz algebras), but became more difficult to formulate as the class of objects grew. The second method is to form an inverse semigroup of partial self maps of the object that arise naturally from its algebraic structure. This process feels more intrinsic, if sometimes less elegant - in any case, it gives an explicit recipe for building the C^* -algebra. In this talk I will describe this process for left cancellative small categories, with emphasis on the most tractable cases. Then I will show that it is easy to produce interesting examples by treating them as glorified directed graphs. The second part of the talk is based on joint work with Ian Mitscher.