

Abstract strategies and formal coherence

Cameron Calk

Kleene algebra have widespread use in mathematics and computer science, from formal language theory to program correctness. Following formalisations of abstract rewriting results in modal Kleene algebra, globular 2-Kleene algebras were introduced, providing a formal setting for reasoning about coherence proofs in abstract rewriting systems. On the other hand, normalisation strategies give a categorical interpretation of the notion of contracting homotopies, constructed via confluent and terminating rewriting. This approach relates standardisation to coherence results in the context of higher dimensional rewriting systems. In this work, we formalise the notion of normalisation strategy in the setting of globular 2-Kleene algebras. In such structures, normalisation strategies allow us to prove a formal coherence theorem via convergent abstract rewriting.