1146-20-446   **Graham A. Niblo*** (g.a.niblo@soton.ac.uk), **Nick J. Wright** and **Jiawen Zhang**. *Coarse median algebras: a new playground for coarse geometry and geometric group theory.*

In the guise of CAT(0) cube complex, discrete median algebras have played a fundamental role in recent progress in geometric group theory and coarse geometry. Their elegant geometric properties are a consequence of a simple but powerful combinatorial structure, which is both a strength and a weakness. It allows easy passage from the local to the global, but imposes a rigidity which restricts applications. Bowditch's introduction of the notion of coarse median space is intended to broaden applications while retaining many of the attractive features of the classical structure, and indeed allows some of the theory to pass to non-median spaces like the mapping class group. The definition is couched in terms of a very large family of coarse approximations which unfortunately break the relationship between combinatorics and geometry and make the passage from local to global harder to achieve. We introduce a new combinatorial notion of coarse median algebra which is considerably simpler than that of coarse median space and show that in natural contexts it captures the required geometry, providing a bridge back to combinatorics and clarifying the role and nature of rank for a coarse median space. (Received January 28, 2019)