

1103-05-125

Brendon Rhoades* (bprhoades@math.ucsd.edu). *Alexander duality and rational associahedra.*

Rational Catalan combinatorics is a program which takes as input a pair of coprime positive integers $(a < b)$ and returns a generalization of a Catalan object (such as noncrossing partitions, Dyck paths, and polygon triangulations). It is a fact of elementary number theory that if $(a < b)$ are coprime positive integers, so are $(b - a < b)$. We show how this observation “categorifies” to an instance of Alexander duality at the level of *rational associahedra*. In doing so, we prove a conjecture of D. Armstrong, B. Rhoades, and N. Williams. Our results exhibit genuinely new features of rational Catalan combinatorics which are invisible at the classical and Fuss levels of generality. (Received August 16, 2014)