Exact finite structure for Robertson-Seymour ideals of tree-decompositions of graphs

Date Tuesday, October 2

Time 3:00 pm

Location 303 Mudd

Abstract: A class I of graphs that is closed under a containment relation that is reflexive and transitive is called an ideal. An exact finite structure S(I) of I, is a finite set of rules that shows how to construct each element of I, and no element outside I. The finite set S(I) can be seen as dual to the obstruction set O(I): the minimal non-elements of I. An exact finite structure for every topological minor ideal of finite trees was discovered by Robertson, Seymour and Thomas in 1993. The duality theorem that assures every topological ideal I of finite trees has a finite obstruction set O(I) was proved by Kruskal in 1960. Around 2007, the structural result of the three authors was generalized to what are known as Friedman ideals of finite trees. The subject of this talk is on further generalization of that result to ideals of tree decompositions of finite graphs. The motive comes due to the fact that finite structures seem to shed light on a conjecture that claims the graph minor ideals are well-quasi-ordered by the subset relation. No prior knowledge of finite structures nor well-quasi-ordering theory is required to follow the talk.