

Negative Results in Combinatorial Enumeration

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When we want to solve a combinatorial enumeration problem and we fail, we may want to have some form of measurement of the difficulty level of the problem. Is the problem actually difficult, or are we just trying to solve it in the wrong way? One way to achieve that is by proving negative results on the generating function of the counting sequence at hand, like proving that the generating function is not rational, not algebraic, not differentiably finite or maybe not even differentially algebraic.

In this talk, we will survey recent methods to prove such negative results (nonrationality and nonalgebraicity). Pattern avoiding permutations will be our main objects on which we illustrate our methods, but words over finite alphabets and lattice paths will also appear.