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Dyck Paths and Fibonacci Numbers

Abstract for the Combinatorics Seminar 2016 June 28

A *Dyck path* is a path in the first quadrant of the planar integral lattice with only northeast and southeast steps, beginning at the origin and ending on the x-axis. It is *non-decreasing* if its valleys (local minima) are non-decreasing from left to right. Leandro Junes, Eva Czabarka, and I discovered a relationship between Fibonacci numbers and the depths of the valleys from the preceding peaks (called their "weights") in a non-decreasing Dyck path. I discuss two ways to count these paths.
