

1106-05-637

Arthur T Benjamin* (benjamin@hmc.edu), Department of Mathematics, Harvey Mudd College, 301 Platt Blvd, Claremont, CA 91711, and **Elizabeth Reiland**. *Combinatorial Proofs of Fibonomial Identities*. Preliminary report.

What do you get when you cross Fibonacci numbers with binomial coefficients? Fibonomial coefficients, of course! Fibonomials are defined like binomial coefficients, with integers replaced by their respective Fibonacci numbers. For example, $\binom{10}{3}_F = \frac{F_{10}F_9F_8}{F_3F_2F_1}$. Remarkably, $\binom{n}{k}_F$ is always an integer. In 2011, Bruce Sagan and Carla Savage derived two very nice combinatorial interpretations of Fibonomial coefficients in terms of tilings created by lattice paths. We believe that these interpretations should lead to combinatorial proofs of Fibonomial identities. We provide a list of simple looking identities that are still in need of combinatorial proof. (Received September 03, 2014)