

Young Mathematicians Symposium of the Greater Region

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Author: Manon Stipulanti, Ph.D. student & FRIA grantee, University of Liège (Belgium)

Title: A way of extending Pascal and Sierpiński triangles to finite words

Summary: Combinatorics on words is a relatively new domain of discrete mathematics, which focuses on the study of words and formal languages. In this context, a *finite word* is simply a finite sequence of letters, or symbols, that belong to a finite set called the *alphabet*. For instance, 01101 and 01 are two finite (binary) words over the binary alphabet $\{0, 1\}$. The *binomial coefficient* $\binom{u}{v}$ of two finite words u and v is the number of occurrences of v as a subsequence of u . For example, $\binom{01101}{01} = 4$. This concept, which is a natural generalization of the classical binomial coefficients of positive integers, has been widely studied for the last thirty years or so. In this talk, I will first recall the link between the classical Pascal triangle and the Sierpiński gasket, and then present a way of extending both objects to binomial coefficients of (binary) words.

Constraints : 35 minutes, English