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The Fibonacci partition triangles. (English) Zbl 1276.11022

Building on their earlier work on quivers (directed graphs), in particular, the representation theory of the 3-Kronecker quivers, the authors here explore partition formulas for the Fibonacci numbers. The resulting two triangles, one for the even-index and the other for the odd-index Fibonacci numbers, resemble the classical Pascal triangle except there is additional additivity along “hooks”. The numbers along inclined lines are obtained by evaluating polynomials. The resulting triangles of numbers appear at once familiar and strange. The valued translation quivers present are derived from group actions and the 3-regular tree. At the end a further investigation is proposed-exploring the relationship of Delannoy paths and elements of the Fibonacci modules.

Reviewer: Gerald L. Alexanderson (Santa Clara)

MSC:
11B39 Fibonacci and Lucas numbers and polynomials and generalizations
16G20 Representations of quivers and partially ordered sets
11B65 Binomial coefficients; factorials; q-identities

Keywords:
Fibonacci numbers; partition formulas; representations of quivers; Kronecker quiver; Fibonacci modules; 3-regular tree; Pascal triangle; additive functions on translation quivers; valued translation quivers; left hammocks; Delannoy paths

Full Text: DOI arXiv

References:

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