COUNTING MAXIMAL INDEPENDENT SETS IN GRID GRAPHS AND SOME EXTENSIONS

Reinhardt Euler

Lab-STICC, CNRS-UMR 3192, Université de Brest, B.P.809, 29285 Brest Cedex, France

e-mail: Reinhardt.Euler@univ-brest.fr

PawełOleksik and Zdzisław Skupień

AGH University of Science and Technology, 30-059 Cracow, Poland

e-mail: oleksik@agh.edu.pl, skupien@agh.edu.pl

Previous work on counting maximal independent sets for paths and 2-dimensional grids ([1], [2]) is extended in two directions: 3-dimensional grid graphs are included and, for some/any $l \in \mathbb{N}$, maximal l-independent sets are counted. Finally, some results for graph classes other than grid graphs are presented.

Keywords: independent set, grid graph, Fibonacci, Padovan numbers, transfer matrix method.

AMS Subject Classification: 11B39, 11B83, 05A15, 05C69.

References

[1] R. Euler, The Fibonacci number of a grid graph and a new class of integer sequences, J. Integer Seq. 8 (2005) Article 05.2.6.

[2] Z. Skupień, Independence or domination. Positioning method in recursive counting on paths or cycles.