

FIBONACCI AND TELEPHONE NUMBERS IN EXTREMAL TREES

URSZULA BEDNARZ AND IWONA WŁOCH

*Faculty of Mathematics and Applied Physics
Rzeszow University of Technology
Powstańców Warszawy 12, 35-359 Rzeszów, Poland*

e-mail: ubednarz@prz.edu.pl
iwloch@prz.edu.pl

Abstract

In this paper we shall show applications of the Fibonacci numbers in edge-coloured trees. In particular we determine the successive extremal graphs in the class of trees with respect to the number of $(A, 2B)$ -edge colourings. We show connections between these numbers and Fibonacci numbers as well as the telephone numbers.

Keywords: edge colouring, tripod, Fibonacci numbers, telephone numbers.

2010 Mathematics Subject Classification: 11B37, 11C20, 15B36, 05C69.

REFERENCES

- [1] U. Bednarz, I. Włoch and M. Wołowiec-Musiał, *Total graph interpretation of numbers of the Fibonacci type*, J. Appl. Math. (2015) ID 837917.

- [2] U. Bednarz, D. Bród, A. Szynal-Liana, I. Włoch and M. Wołowiec-Musiał, *On Fibonacci numbers in edge coloured trees*, *Opuscula Math.* **37** (2017) 479–490.
- [3] R. Diestel, *Graph Theory* (Springer-Verlag, Heidelberg, New York, Inc., 2005).
- [4] I. Gutman and S. Wagner, *Maxima and minima of the Hosoya index and the Merrifield-Simmons index. A survey of results and techniques*, *Acta Appl. Math.* **112** (2010) 323–346.
- [5] H. Prodinger and R.F. Tichy, *Fibonacci numbers of graphs*, *Fibonacci Quart.* **20** (1982) 16–21.
- [6] J. Riordan, *Introduction to Combinatorial Analysis* (Dover, 2002) 85–86.
- [7] R.F. Tichy and S. Wagner, *Extremal problems for topological indices in combinatorial chemistry*, *J. Comput. Biol.* **12** (2005) 1004–1013.
- [8] E. Weisstein, *Tripod index entries for linear recurrence with constant coefficients*, MathWorld, Wolfram Web Resource, Mar 05 (2011).
<http://mathworld.wolfram.com/Tripod.html>
- [9] The On-Line Encyclopedia of Integer Sequences.
<https://oeis.org/>

Received 19 April 2016
 Revised 18 October 2016
 Accepted 18 October 2016