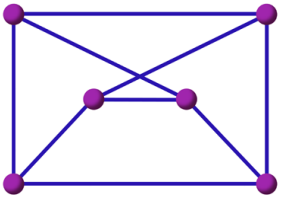

SEMINARIUM
MATEMATYKA DYSKRETNA

wtorek, 28 maja 2013 r. godz. 12.45, s. 304 A3/A4

THE NODAL COUNT {0,1,2,3,...} IMPLIES THE GRAPH IS A TREE

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This talk answers the question "Can one count a tree?" which appears in the following context: It is known that for all n, the n-th eigenfunction on a tree graph has $n-1$ sign changes. Is the reverse true? If yes, one can tell a tree just by counting the number of its sign changes. We treat this question for both metric and combinatorial graphs. For the proof we introduce an auxiliary magnetic field and use a very recent result initiated by Berkolaiko (with follow-up works by Colin de-Verdiere and by Berkolaiko and Weyand) to connect the spectrum and the number of sign changes. The proof also shows that when the graph is supplied with a magnetic field it is not possible for all (or even almost all, in the metric case) the eigenvalues to exhibit a diamagnetic behaviour.