TRIANGULAR CAYLEY MAPS OF $K_{n,n,n}$

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A map (that is, a cellular embedding of a graph G in an orientable surface S) is regular if its group of orientation-preserving automorphisms acts regularly on arcs of G. On the other hand, a Cayley map is an embedding of a Cayley graph G in an orientable surface, such that the group of orientation-preserving automorphisms of the embedding contains a subgroup acting regularly on the vertex set of G. The case when a map is both regular and Cayley is particularly important in algebraic study of maps [1].

It is well known that for every natural n there exists a regular triangular map with underlying graph $K_{n,n,n}$. In our contribution we will be interested in the question for which n there exists a triangular Cayley map of the graph $K_{n,n,n}$.

References

[1] R. B. Richter, J. Širáň, R. Jajcay, T. W. Tucker and M. E. Watkins: *Cayley maps*, J. Combinat. Theory (B), submitted.