A polynomial solvable case of the data arrangement problem on binary trees

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The data arrangement problem on regular trees (DAPT) consists in assigning the vertices of a given graph G to the leaves of a d-regular tree T such that the sum of the pairwise distances of all pairs of leaves in T which correspond to edges of G is minimised. LUCZAK and NOBLE [1] have shown that this problem is NP-hard for every fixed $d \geq 2$. The question about the computational complexity of the DAPT in the case where the guest graph is a tree is still open.

We deal with one special case of this problem where both the guest and the host graph are binary regular trees.

Keywords. Combinatorial optimisation; graph embedding; data arrangement problem; regular trees; binary trees

References

[1] M.J. Luczak and S.D. Noble, Optimal arrangement of data in a tree directory, *Discrete Applied Mathematics* **121 (1–3)**, 307–315, 2002.

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