Polynomially solvable special cases of the data arrangement problem on regular 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 some special cases of this problem, especially with the problem where both the guest and the host graphs are binary regular trees.

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