

Hallett, Michael; McCartin, Catherine**A faster FPT algorithm for the maximum agreement forest problem.** (English) Zbl 1148.68049
Theory Comput. Syst. 41, No. 3, 539-550 (2007).

Summary: Given two unrooted, binary trees, T_1 and T_2 , leaf labelled bijectively by a set of species L , the Maximum Agreement Forest (MAF) problem asks to find a minimum cardinality collection $\mathcal{F} = \{t_1, \dots, t_k\}$ of phylogenetic trees where each element of \mathcal{F} is a subtree of both T_1 and T_2 , the elements of \mathcal{F} are pairwise disjoint, and the leaf labels for the elements of \mathcal{F} partition the leaf label set L . We give an efficient Fixed-Parameter Tractable (FPT) algorithm for the MAF problem, significantly improving on an FPT algorithm given in [*B. Allen and M. Steel*, Ann. Comb. 5, No. 1, 1–15 (2001; [Zbl 0978.05023](#))]. Whereas the algorithm from [loc. cit.] has a running time of $O(k^{3k}) + p(|L|)$, our algorithm runs in time $O(4^k k^5) + p(|L|)$, where k bounds the size of the agreement forest and $p(\cdot)$ is a low order polynomial.

MSC:

- 68W05 Nonnumerical algorithms
- 05C05 Trees
- 05C85 Graph algorithms (graph-theoretic aspects)
- 68Q25 Analysis of algorithms and problem complexity
- 68R10 Graph theory (including graph drawing) in computer science
- 92D15 Problems related to evolution

Cited in 8 Documents**Full Text:** [DOI](#)