

**Brinkmann, Gunnar****Computing the maximal canonical form for trees in polynomial time.** (English) Zbl 1388.05035  
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Summary: Known algorithms computing a canonical form for trees in linear time use specialized canonical forms for trees and no canonical forms defined for all graphs. For a graph  $G = (V, E)$  the maximal canonical form is obtained by relabelling the vertices with  $1, \dots, |V|$  in a way that the binary number with  $|V|^2$  bits that is the result of concatenating the rows of the adjacency matrix is maximal. This maximal canonical form is not only defined for all graphs but even plays a special role among the canonical forms for graphs due to some nesting properties allowing orderly algorithms. We give an  $O(|V|^2)$  algorithm to compute the maximal canonical form of a tree.

**MSC:**

- 05C05 Trees
- 05C85 Graph algorithms (graph-theoretic aspects)
- 05C90 Applications of graph theory
- 92E10 Molecular structure (graph-theoretic methods, methods of differential topology, etc.)

**Keywords:**

canonical form; structure enumeration

**Software:**

GENREG

**Full Text:** [DOI](#)**References:**

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