1037-05-39 **Nicolas Trotignon***, 106–112 boulevard de l'Hopital, 75013 Paris, France, and **Kristina Vuskovic**. *On graphs that do not contain a cycle with a unique chord.*

We give a structural description of the class $\mathcal{C}$ of graphs that do not contain a cycle with a unique chord as an induced subgraph. Our main theorem states that any graph in $\mathcal{C}$ is a either in some simple basic class (namely is a clique, some graph arising by subdividing every edge of a given graph, or is isomorphic to an induced subgraph of the famous Heawood or Petersen graph), or has a cutset consisting in one or two nodes, or has what we call a 1-join. Note that our theorem works in two directions: a graph is in $\mathcal{C}$ if and only if it can be constructed by gluing basic graphs along our decompositions.

This has several consequences: an $O(n^4)$ time algorithm to decide whether a graph is in $\mathcal{C}$, an $O(n+m)$ time algorithm that finds a maximum clique of any graph in $\mathcal{C}$ and an $O(n^4)$ time coloring algorithm for graphs in $\mathcal{C}$. We hope faster algorithms, but this is still on progress. We prove that every graph in $\mathcal{C}$ is either 3-colorable or has a coloring with ω colors where ω is the size of a largest clique. The problem of finding a maximum stable set for a graph in $\mathcal{C}$ is known to be NP-hard. (Received January 11, 2008)