

An $O(m \log m)$ -time Algorithm For detecting Superbubbles

Wing-Kin Sung 1,2, Kunihiro Sadakane 3, Tetsuo Shibuya 3, Abha Belorkar 1, and Iana Pyrogova 1

1 Department of Computer Science, National University of Singapore, Singapore

2 Genome Institute of Singapore, Singapore

3 University of Tokyo, Japan

Abstract

In genome assembly graphs, motifs such as tips, bubbles, cross links are studied in order to find sequencing errors and to understand the nature of the genome. Superbubble, a complex generalization of bubbles, was recently proposed as an important subgraph class for analyzing assembly graphs. At present, a quadratic time algorithm is known. This paper gives an $O(m \log m)$ -time algorithm to solve this problem for a graph with m edges.