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Computational Properties of Watson-Crick Context-Free Grammars (Conference Paper)

Zulkufli, N.L.B.M.[a] ✉, Turaev, S.[b] ✉, Tamrin, M.I.M.[a] ✉, Messikh, A.[a] ✉, Alshaikhli, I.F.T.[a] ✉

[a] Department of Computer Science, KICT, International Islamic University Malaysia, Kuala Lumpur, Malaysia

[b] Department of Information System, KICT, International Islamic University Malaysia, Kuala Lumpur, Malaysia

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Abstract

Deoxyribonucleic acid, or popularly known as DNA, continues to inspire many theoretical computing models, such as sticker systems and **Watson-Crick grammars**. Sticker systems are the abstraction of ligation processes performed on DNA, while **Watson-Crick grammars** are models motivated from **Watson-Crick** finite automata and Chomsky **grammars**. Both of these theoretical models benefit from the **Watson-Crick** complementarity rule. In this paper, we establish the results on the relationship between **Watson-Crick** linear **grammars**, which is included in **Watson-Crick** **context-free** **grammars**, and sticker systems. We show that the family of arbitrary sticker languages, generated from arbitrary sticker systems, is included in the family of **Watson-Crick** linear languages, generated from **Watson-Crick** linear **grammars**. © 2015 IEEE.

Author keywords

formal **grammars**; formal languages; sticker systems; **Watson-Crick** automata; **Watson-Crick grammars**

Indexed keywords

Engineering controlled terms: Computational grammars; Formal languages; Nucleic acids

Chomsky **grammars**; **Computational properties**; Formal **grammars**; Linear language; Sticker systems; **Watson-Crick** automata; **Watson-Crick** finite automata; **Watson-Crick grammars**

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