

**AAAG MONTHLY MEETING & MOCK VIVA
SEMESTER II, 2015/2016**

Day/Date : Sunday, 20 March 2016
Time : 2 – 4 PM
Venue : Main Meeting Room, Department of Mathematical Sciences,
Faculty of Science (C22-310)

TENTATIVE SCHEDULE

Time (PM)	Speakers
2:00 – 3:00	Prof. Dr. Nor Haniza Sarmin, AAAG RGL “AAAG KEY AMAL INDEX (KAI) JANUARY – MARCH 2016”
3:00 – 3:45	Mock VIVA PhD, Muhammad Azrin Ahmad “SECOND ORDER LIMIT LANGUAGE AND ITS PROPERTIES IN YUSOF- GOODE SPLICING SYSTEM” Supervisor: Prof Dr Nor Haniza Sarmin (Main), Dr Fong Wan Heng (Co.) & Dr Yuhani Yusof (Ext. Co.)
3:45 – 4:00	Refreshment

Organised by
Applied Algebra and Analysis Group (AAAG),
Frontier Materials Research Alliance
Universiti Teknologi Malaysia, Johor Bahru, Johor
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ABSTRACT

SECOND ORDER LIMIT LANGUAGE AND ITS PROPERTIES IN YUSOF-GOODE SPLICING SYSTEM



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Abstract

The cutting and pasting phenomenon of deoxyribonucleic acid (DNA) molecule result from the reaction of restriction enzyme and ligase. The mathematical modelling of a splicing system in terms of formal language theory has been introduced by Head to describe the above phenomenon. The discipline of this study has been explored from two perspectives: a model based on the generation of language, and a model to preserve the biological characteristics of the splicing process. In this research, Yusof- Goode (Y-G) splicing system is used to present the actual behavior of the DNA splicing process. A splicing language results from a splicing system. It can be categorized into transient, adult/inert persistent, limit and active persistent language. Previously, only those types of splicing language are considered. In this research, the concept of limit language has been extended to second order limit language. A new definition of the second order limit language is introduced. Besides that, some restrictions on the Y-G splicing system that lead to the existence of non-second order limit language are discussed. Other than that, some sufficient conditions on the existence of the second order limit language in the Y-G splicing system are presented. In addition, a few biological examples are given to compare the difference between those languages. Some relations between second order limit language and various types of Y-G splicing system such as simple, semi-simple, semi-null, uniform splicing, S_k H and null context splicing system are presented. Lastly, a laboratory experiment has been conducted to verify the mathematical model and also to validate the presence of second order limit language in the splicing system. DNA molecules that result from the experiment are the same as the predicted splicing language which show that the model is correct.

Keywords: Splicing system; splicing language; second order limit language; DNA
