LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : PROSIDING INTERNASIONAL

Judul Prosiding (Artikel)	:	Γ – semigroup generated by a semigroup		
Nama/ Jumlah Penulis	:	Y D Sumanto, A Aziz, **Solikhin**, Susilo Hariyanto		
Status Pengusul	:	penulis ke-3		
Identitas Prosiding	:	a. Nama Prosiding	:	Journal of Physics: Conference Series
		b. Nomor ISSN	:	Online ISSN: 1742-6596 Print ISSN: 1742-6588
		c. Vol, No., Bln Thn	:	1524 012042
		d. Penerbit	:	IOP Publishing
		e. DOI artikel (jika ada)	:	10.1088/1742-6596/1524/1/012042
		f. Alamat web penerbit	:	https://iopscience.iop.org/article/10.1088/1742-6596/1524/1/012042
		g. Terindex	:	Scopus, Q4

Kategori Publikasi Prosiding (beri ✓pada kategori yang tepat)	:	√	Prosiding Internasional terindek pada scimagojr dan scopus
			Prosiding Internasional terindek scopus, IEEE Eexplore
			Prosiding Nasional

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Reviewer		Nilai Rata-Rata
	Reviewer 1	Reviewer 2	
a. Kelengkapan unsur isi jurnal (10%)	2,9	2,9	2,9
b. Ruang lingkup dan kedalaman pembahasan (30%)	8,8	8,95	8,875
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	8,8	8,975	8,8875
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	8,7	8,975	8,8375
Total = (100%)	**29,2**	**29,8**	**29,5**
Nilai Pengusul = (40%/3) x 29,5 = 3,93			

Semarang,

Reviewer 1

Nama : Prof. Dr. Sunarsih, M.Si.
NIP. 195809011986032002
Unit Kerja : FSM Undip
Bidang Ilmu : Matematika

Reviewer 2

Nama : Drs. Bayu Surarso, M.Sc Ph.D.
NIP. 19631105 198803 1 001
Unit Kerja : FSM Undip
Bidang Ilmu : Matematika

LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : PROSIDING INTERNASIONAL

Judul Prosiding (Artikel)	:	Γ – semigroup generated by a semigroup		
Nama/ Jumlah Penulis	:	Y D Sumanto, A Aziz, **Solikhin**, Susilo Hariyanto		
Status Pengusul	:	penulis ke-3		
Identitas Prosiding	:	a. Nama Prosiding	:	Journal of Physics: Conference Series
		b. Nomor ISSN	:	Online ISSN: 1742-6596 Print ISSN: 1742-6588
		c. Vol, No., Bln Thn	:	1524 012042
		d. Penerbit	:	IOP Publishing
		e. DOI artikel (jika ada)	:	10.1088/1742-6596/1524/1/012042
		f. Alamat web penerbit	:	https://iopscience.iop.org/article/10.1088/1742-6596/1524/1/012042
		g. Terindex	:	Scopus, Q4

Kategori Publikasi Prosiding (beri ✓pada kategori yang tepat)	:	√	Prosiding Internasional terindek pada scimagojr dan scopus
			Prosiding Internasional terindek scopus, IEEE Eexplore
			Prosiding Nasional

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal prosiding			Nilai Akhir Yang Diperoleh
	Internasional terindek Smimagojr &scopus 30	Internasioan scopus IEEE ☐	Nasional ☐	
a. Kelengkapan unsur isi Prosiding (10%)	3			2,9
b. Ruang lingkup dan kedalaman pembahasan (30%)	9			8,8
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	9			8,8
d. Kelengkapan unsur dan kualitas terbitan/ Prosiding (30%)	9			8,7
Total = (100%)	**30**			**29,2**
Nilai Pengusul = (40%/3) x 29,2 = 3,89				

Catatan Penilaian artikel oleh Reviewer :

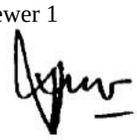
1. **Kesesuaian dan kelengkapan unsur isi prosiding:**
   Isi artikel sesuai, dan lengkap. Unsur-unsurnya diuraikan dengan baik.

2. **Ruang lingkup dan kedalaman pembahasan:**
   Kedalaman pembahasan baik. Ruang lingkup kajian matematika analisis.

3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:**
   Materi sangat mutakhir dan ada unsur baru di kajian matematika analisis. Penyajian kemutakhirannya dalam artikel ini baik dan jelas didukung dengan 6 referensi dan 4 referensi sudah out of date < 10 tahun,

4. **Kelengkapan unsur dan kualitas terbitan:**
   Unsur dan kualitas terbitan artikel dalam prosiding ini cukup bagus. Dengan tingkat similaritas 16%.

Semarang, 4 Maret 2023
Reviewer 1



Nama : Prof. Dr. Sunarsih, M.Si.
NIP. 195809011986032002
Unit Kerja : FSM Undip
Bidang Ilmu : Matematika

LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : PROSIDING INTERNASIONAL

Judul Prosiding (Artikel)	:	Γ – semigroup generated by a semigroup		
Nama/ Jumlah Penulis	:	Y D Sumanto, A Aziz, **Solikhin**, Susilo Hariyanto		
Status Pengusul	:	penulis ke-3		
Identitas Prosiding	:	a. Nama Prosiding	:	Journal of Physics: Conference Series
		b. Nomor ISSN	:	Online ISSN: 1742-6596 Print ISSN: 1742-6588
		c. Vol, No., Bln Thn	:	1524 012042
		d. Penerbit	:	IOP Publishing
		e. DOI artikel (jika ada)	:	10.1088/1742-6596/1524/1/012042
		f. Alamat web penerbit	:	https://iopscience.iop.org/article/10.1088/1742-6596/1524/1/012042
		g. Terindex	:	Scopus, Q4

Kategori Publikasi Prosiding (beri ✓pada kategori yang tepat)	:	☑	Prosiding Internasional terindek pada scimagojr dan scopus
		☐	Prosiding Internasional terindek scopus, IEEE Eexplore
		☐	Prosiding Nasional

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal prosiding			Nilai Akhir Yang Diperoleh
	Internasional terindek Smimagojr &scopus ☑	Internasioan scopus IEEE ☐	Nasional ☐	
	30			
a. Kelengkapan unsur isi Prosiding (10%)	3			2,9
b. Ruang lingkup dan kedalaman pembahasan (30%)	9			8,95
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	9			8,975
d. Kelengkapan unsur dan kualitas terbitan/ Prosiding (30%)	9			8,975
Total = (100%)	**30**			**29,8**
Nilai Pengusul = (40%/3) x 29,8 = 3,97				

Catatan Penilaian artikel oleh Reviewer :

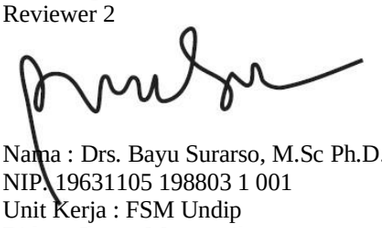
1. **Kesesuaian dan kelengkapan unsur isi prosiding:**
   Unsur kelengkapan artikel ini baik. Namun metodologi tidak disampaikan dengan eksplisit. Isi artikel juga sangat sesuai dengan kajian bidang matematika analisis dan aljabar.

2. **Ruang lingkup dan kedalaman pembahasan:**
   Lingkup pembahasan tentang pembentukan semigrup. Kajian ini merupakan kajian operator teori yang merupakan bagian dari matematika analisis. Tingkat kedalaman materi cukup baik.

3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:**
   Artikel ini membahs topik yang cukup mutakhir dan unsur kemutakhiran artikel dan orisinilitas penulisan baik. Artikel didukung dengan Pustaka yang mencukupi.

4. **Kelengkapan unsur dan kualitas terbitan:**
   Unsur artikel lengkap, kualitas terbitan baik. Artikel diterbitkan pada IOP Publishing.

Semarang, Februari 2023
Reviewer 2



Nama : Drs. Bayu Surarso, M.Sc Ph.D.
NIP. 19631105 198803 1 001
Unit Kerja : FSM Undip
Bidang Ilmu : Matematika

Back to results | Previous 8 of 18 Next

Download Print Save to PDF Add to List More...

Abstract

Indexed keywords

SciVal Topics

Metrics

Journal of Physics: Conference Series • *Open Access* • Volume 1524, Issue 1 • 22 June 2020 • Article number 012042 • 9th International Seminar on New Paradigm and Innovation of Natural Sciences and Its Application, ISNPINSA 2019 • Semarang, Central Java • 22 October 2019 • Code 161297

Document type
Conference Paper • *Bronze Open Access*

Source type
Conference Proceedings

ISSN
17426588

DOI
10.1088/1742-6596/1524/1/012042

View more

Γ - semigroup generated by a semigroup

Sumanto Y.D.; Aziz A. ; Solikhin; Hariyanto S.

Save all to author list

[a] Department of Mathematics, Fsm, Diponegoro University, Jl. Prof. H. Soedarto, S.H., Semarang, Indonesia

Abstract

In Γ - semigroup S, the element of Γ maybe a binary operation in S. Every element of any semigroupS can define a binary operation in S. A collection of binary operations defined of the element of S generates Γ - semigroup S. © Published under licence by IOP Publishing Ltd.

Indexed keywords

SciVal Topics

Metrics

References (6)

View in search results format

Scopus Preview

Source details

Journal of Physics: Conference Series

Scopus coverage years: from 2005 to Present

ISSN: 1742-6588 E-ISSN: 1742-6596

Subject area: Physics and Astronomy: General Physics and Astronomy

Source type: Conference Proceeding

View all documents > | Set document alert | Save to source list | Source Homepage

CiteScore 2021
0.8

SJR 2021
0.210

SNIP 2021
0.395

CiteScore | CiteScore rank & trend | Scopus content coverage

ⓘ Improved CiteScore methodology

CiteScore 2021 counts the citations received in 2018-2021 to articles, reviews, conference papers, book chapters and data papers published in 2018-2021, and divides this by the number of publications published in 2018-2021. Learn more >

CiteScore 2021

$$0.8 = \frac{74{,}925 \text{ Citations 2018 - 2021}}{96{,}702 \text{ Documents 2018 - 2021}}$$

Calculated on 05 May, 2022

CiteScoreTracker 2022 ⓘ

$$0.9 = \frac{87{,}675 \text{ Citations to date}}{95{,}266 \text{ Documents to date}}$$

Last updated on 05 February, 2023 • Updated monthly

CiteScore rank 2021 ⓘ

Category	Rank	Percentile
Physics and Astronomy └ General Physics and Astronomy	#195/240	18th

View CiteScore methodology > | CiteScore FAQ > | Add CiteScore to your site

The 9th International Seminar on New Paradigm and Innovation on Natural Science and Its Application

October 22, 2019

Semarang, Indonesia

PREFACE

The 9th International Seminar on New Paradigm and Innovation on Natural Sciences and Its Application (ISNPINSA-9) is annual seminars organized by Faculty of Sciences and Mathematics (FSM) Diponegoro University and has been successfully conducted since 2011. The ISNPINSA-9 was held in Semarang, Indonesia on October 22th 2019. The aims of ISNPINSA are to facilitate brain storming and state of the art information in field of sciences and mathematics; to increase innovation of technology that can be applied in industries; to contribute in formulating strategy to increase the role of science for community; and to stimulate collaboration between industries, researchers and government to increase community welfare. The theme of 9th ISNPINSA in 2019 is "CONTRIBUTION OF SCIENCE TOWARD INDUSTRY 4.0 ERA".

The number of participants of the seminar were 210 including keynote speakers, invited speakers, oral presenters, poster presenters, and non-presenters coming from various institutions of various countries, including France, Malaysia, Indonesia and those who come from all parts of Indonesia consist of researchers, lecturers, postgraduate and undergraduate students from various universities. There are 169 papers were presented in this seminar, consist of 4 keynote speakers, 6 invited speakers, oral presentations, and 9 poster presentations. After the selection process, there are 149 articles selected papers to be published in the present conference proceeding. The scope of the field of participants comes from various fields including biology, physics, chemistry, statistics, mathematics, informatics, environment, public health, and relevant fields that contribute to sustainable development.

The Chief of Editor

Dr. Suryono. S.Si., M.Si.

LIST OF REFEREES AND EDITORS

I. Team of Reviewers and Referees

Prof. Dr. Widowati, S.Si., M.Si. (Diponegoro University)
Dr. Eng. Adi Wibowo, S.Si., M.Kom. (Diponegoro University)
Dr. Drs. Sutimin, M.Si. ((Diponegoro University)
Prof. Drs. Mustafid, M.Eng., Ph.D. (Diponegoro University)
Dr. Tarno, M.Si. (Diponegoro University)
Dr. Budi Warsito, M.Si. (Diponegoro University)
Dr. Di Asih I Maruddani, M.Si. (Diponegoro University)
Dr. Drs. Rukun Santoso, M.Si. (Diponegoro University)
Dr. Redemtus Heru Tjahjana, S.Si., M.Si. (Diponegoro University)
Dinar M.K.N., S.T., M.InfoTech.(Comp)., Ph.D. (Diponegoro University)
Dr. Dra. Tatik Widiharih, M.Si. (Diponegoro University)
Farikhin, M.Sc., Ph.D. (Diponegoro University)
Drs. Sapto P. Putro, M.Si., Ph.D. (Diponegoro University)
Dr. Jafron W. Hidayat, M.Sc. (Diponegoro University)
Dr. Munifatul Izzati, M.Sc. (Diponegoro University)
Dr.rer.nat. Anto Budiharjo, M.Biotech., Ph.D. (Diponegoro University)
Dr. Tri Retnaningsih Soeprobowati, M.Si. (Diponegoro University)
Dr. Endang Kusdiyantini, DEA. (Diponegoro University)
Dr. Hermin Pancasakti K., M.Si. (Diponegoro University)
Rully Rahadian, M.Si., PhD. (Diponegoro University)
Dr. Agung Janika Sitasiwi, M.Si. (Diponegoro University)
Dr. Erma Prihastanti, M.Si. (Diponegoro University)
Prof. Dr. Wahyu Setia Budi, MS. (Diponegoro University)
Dr. Muhammad Nur, DEA. (Diponegoro University)
Dr. Kusworo Adi, MT. (Diponegoro University)
Dr. Heri Sutanto, M.Si. (Diponegoro University)
Dr. Suryono, M.Si. (Diponegoro University)
Dr. Eng. Ali Khumaeni, M.E. (Diponegoro University)
Dr. Udi Harmoko, S.Si., M.Si. (Diponegoro University)
Dr. Rahmat Gernowo, M.Si. (Diponegoro University)
Ismiyarto, M.Si., Ph.D. (Diponegoro University)
Dr. Retno Ariadi Lusiana, M.Si. (Diponegoro University)
Nor Basid Adiwibawa P., S.Si., M.Sc., Ph.D (Diponegoro University)

II. Team of Technical Editors

Dr. Suryono, S.Si., M.Si. (Diponegoro University)
Nor Basid Adiwibawa P., S.Si., M.Sc., Ph.D (Diponegoro University)
Heri Sugito, S.Si., M.Sc. (Diponegoro University)
Alik Maulidiyah, S.Si., M.Sc. (Diponegoro University)

LIST OF SPEAKER

I. Keynote Speaker

No.	Name	Research Field	Institution	Country
1.	Prof. Emmanuel Cornillot	Biotechnology	Universite de' Monpellier	Perancis
2.	Prof. Dr. Baba Musta	Geochemistry	Faculty of Science, UMS	Malaysia
3.	Prof. Dr. Ir. Rokhmin Dahuri, MS.	Marine Resource and Environmental Studies	President of Indonesian Aquaculture Society; Proffesor in Marine Resource and Environmental Studies	Indonesia
4.	Sapto P. Putro, M.Si., Ph.D.	Marine Ecology and Aquaculture	Faculty of Science and Mathematics, Diponegoro University	Indonesia

II. Invited Speaker

No.	Name	Department	Institution	Country
1.	Dinar Mutiara Kusumo Nugraheni, S.T., M.InfoTech.(Comp).	Computer Science	FSM UNDIP	Indonesia
2.	Dr. Eng. Ali Khumaeni, S.Si., MS	Physics	FSM UNDIP	Indonesia
3.	Dr. M. Cholid Djunaidi, M.Si.	Chemistry	FSM UNDIP	Indonesia
4.	Dr. Lilih Khotimperwati, S.Si., M.Si.	Biology	FSM UNDIP	Indonesia
5.	Dr. Tarno, M.Si.	Chemistry	FSM UNDIP	Indonesia
6.	Farikhin, M.Sc. Ph.D.	Mathematics	FSM UNDIP	Indonesia

LIST OF COMMITTEE

I. Steering committee

Prof. Dr. Widowati, M.Si.
Farikhin, S.Si., M.Si., Ph.D.
Dr. Kusworo Adi, S.Si., MT.
Sapto P. Putro, M.Si., Ph.D.

II. Organizing Committee

1. Dr. Suryono, M.Si.
2. Nor Basid Adiwibawa Prasetya, S.Si., M.Sc., Ph.D.
3. Dinar Mutiara Kusumo Nugraheni, S.T., M.InfoTech.(Comp).
4. Nurdin Bahtiar, S.Si., M.Kom.
5. Dr. Eng. Ali Khumaeni, ME.
6. Dr. Di Asih I Maruddani, S.Si., M.Si.
7. Dra. Sri Harumaningsih, .S.Si., M.IP.
8. Lilik Maryuni, S.E., M.Si
9. Novita Sulistyana, S.E., M.Si.
10. Susilo Wanto, SH
11. Herman Aprianto, S.Kom.
12. Iys Syabilla Rusda, S.IP.
13. Choiriyah, SE
14. Nur Azizah, SE
15. Alik Maulidiyah, S.Si. M.Sc.
16. Rahmawan Bagus Trianto, S.Kom.
17. Deby Yuniarto
18. Siswoyo

Table of contents

Volume 1524

2020

Previous issue Next issue

The 9th International Seminar on New Paradigm and Innovation of Natural Sciences and its Application 22 October 2019, Central Java, Indonesia

Accepted papers received: 16 April 2020
Published online: 22 June 2020

Open all abstracts

Preface

Papers

Isolation and identification of rare actinomycete-like bacteria from soil-based on 16S ribosomal RNA gene sequences

Y Eshananda[1], F Ningsih[1,2], Y Sakai[3,4], A Yokota[3], S Yabe[3,4], W Sjamsuridzal[1,2]

[1]Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Indonesia, Kampus UI Depok, Depok 16424, Indonesia
[2]Center of Excellence for Indigenous Biological Resources-Genome Studies, Faculty of Mathematics and Natural Sciences, Universitas Indonesia, Kampus UI Depok, Depok 16424, Indonesia
[3]Department of Microbial Resources, Graduate School of Agricultural Science, Faculty of Agricultural, Tohoku University, 468-1 Aoba, Aramaki, Sendai, Miyagi 980-0845, Japan
[4]Hazaka Plant Research Center, Kennan Eisei Kogyo Co., Ltd., 44 Aza-Inariyama, Oaza-Ashitate, Murata-Cho, Shibata gun, Miyagi 989-1311, Japan.

Corresponding author: yuriza.eshananda@ui.ac.id

Abstract. The rare actinomycete-like bacteria are mycelium-forming bacteria other than phylum *Actinobacteria* that difficult to isolate and cultivate. This group of bacteria was recently speculated by many scientists as a potential new microbial resource for the discovery of novel compounds, as a substitute for actinomycetes. In this study, we isolate and identify rare actinomycete-like bacteria from forest soil collected under bamboo trees, near the CisolokGeysers, Sukabumi, Indonesia. The isolation of bacteria was performed using Reasoner's 2A (1:10 dilution) medium with 2% gellan gum instead of agar and incubated at 30 °C for three weeks. The 16S rRNA gene sequences of the isolates were examined to determine their taxonomic position. Four isolates designated K17-1, K17-2, K42, and K44 showed pale oranges colonies and formed mycelia were obtained. The results of 16S rRNA gene sequences of these isolates showed high similarity to members of the genus *Dictyobacter* in the family *Dictyobacteraceae* of the class *Ktedonobacteria* of the phylum *Chlorofexi*, with values 97.16-98.02%, and most closely related to the species *Dictyobacteraurantiacus* S-27^{T} (97.16-98.02% similarities). This result suggested that the member of the class *Ktedonobacteria*, which considered as rare actinomycete-like bacteria, such as *Dictyobacter* could be found in the forest soil of the geothermal area.

1. Introduction

Actinobacteria are gram-positive bacteria that have a high percentage of guanine and cytosine in their genome [1]. This group morphologically comprises unicellular organisms to mycelium-forming bacteria which called Actinomycetes [1,2]. However, bacteria that have filamentous appearance also could be found in the phylum *Chlorofexi*. The member of this phylum which has actinomycete-like morphology is present in the four different class namely *Chlorofexi*, *Anaerolineae*, *Caldilineae*and *Ktedonobacteria* [3]. Among these class, *Ktedonobacteria* has some obvious morphological features which distinguish themselves from others. The member of *Ktedonobacteria*are aerobic organism and forming branched mycelia with spores like actinomycetes [3,4]. Moreover, most validly published strains of *Ktedonobacteria*budding their multiple spores per cell on the aerial mycelium which unique among bacteria [5]. All of*Ktedonobacteria*identified as gram-positive bacteria while almost of the member in phylum *Chlorofexi* were gram-negative [3,6]. Based on these exceptional characters, class *Ktedonobacteria* could be included as the rare actinomycete-like bacteria.

Rare actinomycete-like bacteria could provide an alternative for the discovery of new compounds derived from microorganisms because spore formation usually would be followed by the production of secondary metabolites [7,8]. Further analysis of the genomic of nine members of rare actinomycete-like bacteria

Hoax news validation using similarity algorithms

S Y Yuliani[1,2], S Sahib[2], M F Abdollah[2], Y S Wijaya, N H M Yusoff

[1]Information Security and Networking Research Group (InFORSNET), Faculty of Information Communication Technology, Universiti Teknikal Malaysia Melaka Malaka, Malaysia
[2]Informatic Department, Faculty Engineering, University Widyatama Bandung, Indonesia

Corresponding author: sy.yuliany@gmail.com

Abstract. News that is presented every day on social media dramatically affects the feelings, feelings, thoughts, or even actions of a person or group. Hoax News is one of them which is disturbing the public and raising noise in various fields, ranging from politics, culture, security, and order, to the economy. Inseparable from social media users. How every day, there is information on social media, which is not necessarily true so that people are provoked by hoax on social media. The news detection system in this study was designed using Unsupported Learning so that it does not require data training. The system was built using the Equation algorithm to calculate the validity of document similarity. Extraction results used to search for content related to user input using a detection engine, then the similarity value and the time needed to utilize hoax news are calculated. System validation testing by using a four text similarity algorithm called the Equation algorithm, the Levenshtein algorithm, the Smith-Waterman algorithm, the Damerau Levenshtein algorithm; this algorithm is used to find the best analytical solution of news hoaxes and submissions needed to find the news hoax password. The final results of the deception detection research using a script that has been done for Validation using an algorithm, get the value of accuracy in detection using the Smith-Waterman algorithm, which produces an accuracy value of text similarity of 99.29% and can be used a process of 6, 57 seconds, followed by the second sequence that is the similarity algorithm produces an accuracy of 75% and requires a processing time of 4.94 seconds, then the third sequence is the Levenshtein algorithm with an accuracy of 55.02% and requires a processing time of 5.49 seconds, and is used today is Damerau Levenshtein algorithm is 55.02% and requires a processing time of 7.54%. The results of research tests on this text can conclude the more text on the detection engine, the higher the verification value and the higher the time needed to process hoax news.

1. Introduction

Sharing information is a positive thing, but not all information disseminated through social media is in the form of facts. There have been various cases of spreading the news that is not facts or often called hoaxes. Whereas hoax is critical information that misleads human perception by spreading false information but considered as valid, No wonder then the intensity of fake news and hoax news on social media is so viral on social media [1]. For personal and group benefit by spreading harmful content that caused unrest and mutual suspicion in the community [2]. The ease and speed of dissemination on social media make this hoax news known to many people in a relatively short period, and can to more people.

□ – semigroup generated by a semigroup

by Susilo Hariyanto

Submission date: 07-Mar-2023 08:23AM (UTC+0700)
Submission ID: 2030750506
File name: pscience.iop.org_article_10.1088_1742-6596_1524_1_012042_pdf.pdf (657K)
Word count: 1949
Character count: 8876

Γ– semigroup generated by a semigroup

Y D Sumanto, A Aziz, Solikhin, S Hariyanto

Department of Mathematics, FSM, Diponegoro University, Jl. Prof. H. Soedarto, S.H.,Semarang, Indonesia

Corresponding author: abdul_aziz01@yahoo.com

Abstract. In Γ– semigroup S, the element of Γ maybe a binary operation in S. Every element of any semigroup$S$ can define a binary operation in S. A collection of binary operations defined of the element of S generates Γ– semigroup S.

1. Introduction

A semigroup is an algebraic structure consisting of a nonempty set equipped with an associative binary operation in the set. Semigroup plays an important role in some areas of mathematics, among others, in coding theory, combinatorics, and mathematical analysis. In 1986, Sen and Saha [1-3] defined an idea Γ– Semigroup which was a generalization of a semigroup. Some classical ideas from Semigroup have been developed in semigroups such as commutativity, regularity, and ideal [4-6] and many others.

In this article, Γ– semigroup S is viewed from the other side where Γas a set of associative binary operations on S. This does not change the idea that has been developed on the semigroup defined by Sen. It means that all ideas on semigroups defined by Sen also apply to Γ– semigroup in this article.

It is interesting to be examined that each of Semigroup can generate Γ– semigroup. Any element of a semigroup S can define n associative binary operation on S such that a collection of associative binary operations on S Γwill be showed that S is a Γ–semigroup. Furthermore, we will review the properties f the Γ– Semigroup deprived of it's generating semigroup.

2. Γ–semigroup

Let S and Γ be two non-empty sets. S is called Γ –semigroup [1], [2], [3] if there exists a mapping $S \times \Gamma \times S \to S$ which written with $(x,\gamma,y) \to x\gamma y$ that satisfy $(x\gamma y)\beta z = x\gamma(y\beta z)$ for every $x,y,z \in S$ and for every $\gamma,\beta \in \Gamma$ .Some of the ideas of semigroup developed on Γ– semigroup S is said to be commutative if $x\gamma y = y\gamma x$ for every $x,y \in S$ and $\gamma \in \Gamma$. Element a in the Γ– semigroup S is said regular if there exists $x \in S$ such that $a = axa$ and S is called regular semigroup if for every element of S is regular. Element a in the Γ – semigroup is said regular if $a \in a\Gamma S\Gamma a$ and S is called regular Γ – semigroup if every element of S is regular. Element a in the semigroup S is said to complete regular if there exists $\alpha \in \Gamma$ and $b \in S$ such that $a = (a\alpha b)\alpha a$ and $a\alpha b = b\alpha a$. Γ – semigroup S is said to complete regular if every element of S is complete regular [4]. If S is a semigroup, m and n are nonnegative integers, $a \in S$ is said a (m,n) – regular if there exists $b \in S$ such that $a = a^m ba^n$. S is called (m,n) – regular semigroup if every element of $S$is a

(m,n) – regular. (In this case, a^0 is defined with $a^0b=b$ and $ba^0=b$ .If S is a Γ – semigroup, m, n are non-negative integers, the element $a\in S$ is said (m,n) – regular if there exists $b\in S$ such that $a\in a^m\Gamma b\Gamma a^n$. Γ – semigroup S is called a (m,n) – regular Γ – semigroup if every element of S is (m,n) – regular.In this case, a^0 is defined with $a^0\Gamma b=\{b\}$ and $b\Gamma a^0=\{b\}$. [5]

$A,B\subseteq S$ is defined by $A\Gamma B=\{a\gamma b \mid a\in A,b\in B,\gamma\in\Gamma\}$ where Let S is Γ – semigroup. If $b\in S$ and $A\Gamma b=A\Gamma\{b\}, b\Gamma A=\{b\}\Gamma A$, the non-empty set $A\subseteq S$ is called Γ – subsemigroup of S if $A\Gamma A\subseteq A$, a non-empty set $I\subseteq S$ is called left Γ – the ideal of S if for every $x\in I,\gamma\in\Gamma$ dan $b\in S, x\gamma b\in I$. In other words $I\Gamma S\subseteq I$. Next I is called a right– Ideal of S if $S\Gamma I\subseteq I$. It is called Γ – the ideal of S if $S\Gamma I\subseteq I$ and $I\Gamma S\subseteq I$. I is called bi – Γ – the ideal of S if $I\Gamma S\Gamma I\subseteq I$. [6]

$A\subseteq S$ is called $(m,n)-\Gamma$ – ideal if $A^m\Gamma S\Gamma A^n\subseteq A$ where m and n are non-negative integers. In this case, A^0 is defined with $A^0\Gamma S=S$ and $S\Gamma A^0=S$ [5].

3. Γ–Semigroup generated by a semigroup

In this article, Γ is a binary operation set on S such that Γ – semigroup is redefined as follows.

Definition 3.1 Let S be a non-empty set and Γ be a set of associative binary operations on S. S is called Γ – semigroup if $(x\alpha y)\beta z=x\alpha(y\beta z)$ for every $x,y,z\in S$ and for every $\alpha,\beta\in\Gamma$. Note that, since Γ it is a collection of associative binary operations on S, it means for every $x,y\in S$ and for every $\alpha\in\Gamma$ satisfies $x\alpha y\in S$. Definition 3.1 no need to be written $x\alpha y\in S$ for every $x,y\in S$ and for every $\alpha\in\Gamma$ .All the classical ideas developed in the Γ – Semigroup defined by Sen [1] also apply to Γ – semigroup defined in this article. Now, we define the equality of two binary operations on a set.

Definition 3.2 Two binary operations α and β on the non-empty set S are said equally in S if $x\alpha y=x\beta y$ for every $x,y\in S$.

The next discussions show that every element of semigroup S can define a binary operation on S. In this article it Γ is the set of all binary operations defined of the elements of S, then S is a Γ – semigroup. Now, we define a binary operation from the elements of a semigroup.

Definition 3.3 Let S be a non-empty set, α be a binary operation on S and (S,α) be a semigroup if $a\in S$ defined binary operation αa on S with $x\alpha a\alpha y=(x\alpha a)\alpha y=x\alpha(a\alpha y)$ for every $x,y\in S$. Next, $\alpha a\alpha$ it can be written as α_a .

Example 3.4 Let (S,α) be a semigroup with $S=\{a,b,c\}$ dan α are given in the following Caley table.

α	a	b	c
a	a	b	c
b	b	b	b
c	c	c	c

For $b \in S$, the operation of binary α_b is defined with $x\alpha_b y = (x\alpha b)\alpha y$ for every $x, y \in S$ such that the following Caley table is obtained.

α_b	a	b	c
a	b	b	b
b	b	b	b
c	c	c	c

From definition 3.3 obtained some of the following simple properties.

Theorem 3.5 If e is an identity element or left identity or right identity on semigroup (S,α) then $\alpha_e = \alpha$.

Proof

For all $x, y \in S$, $x\alpha_e y = (x\alpha_e)\alpha y = x\alpha y$.

By definition 3.3, its yields $\alpha_e = \alpha$. ■

Theorem 3.6 Let (S,α) is a semigroup and $a, b \in S$. If $a\alpha x = b\alpha x$ or $x\alpha a = x\alpha b$ for every $x \in S$ then $\alpha_a = \alpha_b$.

Proof

For all $x, y \in S$,

$$x\alpha_a y = (x\alpha_a)\alpha y$$
$$= (x\alpha_a)\alpha y$$
$$= x\alpha_b y \quad ■$$

Example 3.7 Let (S,α) be a Semigroup with $S = \{a,b,c,d\}$ and α defined by the Caley table below.

α	a	b	c	d
a	a	a	a	a
b	a	b	c	d
c	a	a	a	a
d	a	b	c	d

Clearly, $\alpha_b = \alpha_d = \alpha$ and $\alpha_a = \alpha_c$.

$\alpha_b = \alpha_d$	a	b	c	d
a	a	a	a	a
b	a	b	c	d
c	a	a	a	a
d	a	b	c	d

$\alpha_a = \alpha_c$	a	b	c	d
a	a	a	a	a
b	a	a	a	a
c	a	a	a	a
d	a	a	a	a

This theorem show if (S,α) is a semigroup and $\Gamma = \{\alpha_a \mid a \in S\}$ with α_a as defined on the Definition 3.3 then S is a Γ – semigroup.

Theorem 3.8 It (S,α) is a semigroup and $\Gamma = \{\alpha_a \mid a \in S\}$ then S is a Γ – semigroup.

Proof: Let (S,α) be a semigroup and $\Gamma=\{\alpha_a \mid a\in S\}$. Take an arbitrary $x,y,z\in S$ and $\alpha_a\in\Gamma$.

$$\begin{aligned}(x\alpha_a y)\alpha_a z &= ((x\alpha a)\alpha y)\alpha(a\alpha z)\\ &= (x\alpha a)\alpha(y\alpha(a\alpha z))\\ &= x\alpha_a(y\alpha_a z)\end{aligned}$$

So for every $\alpha_a\in\Gamma$ is an associative binary operation on *S*. It follows that for every $x,y,z\in S$ and $\alpha_a,\alpha_b\in\Gamma$ satisfies

$$\begin{aligned}(x\alpha_a y)\alpha_b z &= ((x\alpha a)\alpha y)\alpha(b\alpha z)\\ &= (x\alpha a)\alpha(y\alpha(b\alpha z))\\ &= x\alpha_a(y\alpha_b z)\end{aligned}$$

Finally, *S* is a Γ – semigroup.■

Example 3.9 From Example 3.4, $S=\{a,b,c\}$

α	a	b	c
a	a	b	c
b	b	b	b
c	c	c	c

We obtain $\Gamma=\{\alpha_a,\alpha_b,\alpha_c\}$ with $\alpha_a=\alpha$ and α_b,α_c provided by the table below.

α_b	a	b	c
a	b	b	b
b	b	b	b
c	c	c	c

α_c	a	b	c
a	c	c	c
b	b	b	b
c	c	c	c

The following theorems show the properties of Γ – semigroup derived from it's generating semigroup.

Theorem 3.10 If (S,α) is a commutative semigroup and $\Gamma=\{\alpha_a \mid a\in S\}$ then *S* is a commutative Γ – semigroup.

Proof

Take an arbitrary $x,y\in S$ and $\alpha_a\in\Gamma$.

$$\begin{aligned}x\alpha_a y &= (x\alpha a)\alpha y\\ &= y\alpha(x\alpha a)\\ &= y\alpha(a\alpha x)\\ &= y\alpha_a x\end{aligned}$$

Theorem 3.11. If (S,α) it is a (m,n) – regular semigroup and $\Gamma=\{\alpha_a \mid a\in S\}$ with *m,n* are positive integers then *S* is a (m,n) – regular Γ – semigroup.

Proof :Let (S,α) be a (m,n) – regular semigroup. For $a\in S$, a^m it is written as $a^m = a\alpha a\alpha a\alpha a....\alpha a$ (the number of *a* is *m* times). For every, $a\in S$ there exist $x\in S$ such that $a=a^m\alpha x\alpha a^n$

$$
\begin{aligned}
&=\left(a^m\alpha x\alpha a^n\right)^m \alpha x\alpha\left(a^m\alpha x\alpha^n\right)^n\\
&=a\alpha\left(a^{m-1}\alpha x\alpha a^n\right)\alpha a\alpha\left(a^{m-1}\alpha x\alpha a^n\right)\alpha.....a\alpha\left(a^{m-1}\alpha x\alpha a^n\right)\alpha x\alpha\\
&=\left(a^m\alpha x\alpha a^{n-1}\right)\alpha a\alpha\left(a^m\alpha x\alpha a^{n-1}\right)\alpha a.....\alpha\left(a^m\alpha x\alpha a^{n-1}\right)\alpha a\\
&=a\alpha a^{m-1}\alpha x\alpha a^n a\alpha a^{m-1}\alpha x\alpha a^n .....\alpha a^{m-1}\alpha x\alpha a^n\alpha x\alpha a^m\alpha x\alpha a^{n-1}\alpha a.\\
&\quad .....\alpha a^m\alpha x\alpha a^{n-1}a\\
&\in \underbrace{a\Gamma a\Gamma....\Gamma a}_{a\,is\,m\,times}\Gamma x\Gamma\underbrace{a\Gamma....\Gamma a}_{a\,is\ \,n\,times}\\
&=a^m\Gamma x\Gamma a^n
\end{aligned}
$$

Finally, *S* is a (m,n) – regular Γ – semigroup. ■

Theorem 3.12 If (S,α) is a regular semigroup and $\Gamma=\{\alpha_a \mid a\in S\}$ then *S* is a completely regular Γ – Semigroup.

Proof :Let (S,α) is a regular Semigroup. Take an arbitrary $a\in S$, then there exists $b\in S$ such that

$$
\begin{aligned}
a&=(a\alpha b)\alpha a\\
&=\left((a\alpha b)\alpha a\right)\alpha b\alpha\left(a\alpha(b\alpha a)\right)\\
&=(a\alpha b)\alpha\left((a\alpha b)\alpha a\right)\alpha(b\alpha a)\\
&=(a\alpha b)\alpha a\alpha a\alpha(b\alpha a)\\
&=a\alpha_b a\alpha_b a
\end{aligned}
$$

and

$$a\alpha_b a=a\alpha a$$

It follows that for every $a\in S$,there exists $\alpha\in\Gamma$ and $b\in S$ such that $a=(a\alpha_b a)\alpha_b a$ and $a\alpha_b a=a\alpha a$. Finally, *S* is a completely regular Γ – semigroup. ■

Theorem 3.13 If *A* is a left ideal of semigroup (S,α) and $\Gamma=\{\alpha_a \mid a\in S\}$ then *A* is left Γ – ideal of Γ – semigroup *S*.

Proof: Let A be a left ideal of the semigroup (S,α). Take an arbitrary $x \in S$, $\alpha r \in \Gamma$ and $a \in A$. It follows that $x\alpha_r a = (x\alpha r)\alpha a \in A$. If A is the ideal or right ideal of semigroup (S,α) and $\Gamma = \{\alpha_a \mid a \in S\}$ then A is a Γ – ideal or right Γ – ideal respectively of Γ – semigroup S.

Theorem 3.14. If A be a bi – Γ– ideals in Γ– semigroup (S,α) and $\Gamma = \{\alpha_a \mid a \in S\}$ then A is bi – Γ – ideal of Γ – semigroup S.

Proof :Let A be a bi – Γ– ideals in Γ– semigroup (S,α) then $A\alpha S\alpha A \subseteq A$. Take an arbitrary $a,b \in A, x \in S$ and $\alpha_r, \alpha_s \in \Gamma$. It follows that

$$\begin{aligned} a\alpha_r x\alpha_s b &= (a\alpha r)\alpha x\alpha (s\alpha b) \\ &= a\alpha((r\alpha x)\alpha s)\alpha b \\ &\in A\alpha S\alpha A \subseteq A \end{aligned}$$

Clearly, A is a Bi – Γ– ideals in Γ– semigroup.

4. Conclusion

Every element of a semigroup could define the binary operations on the semigroup. A collection of all binary operations defined by the element of semigroup could generate Γ– semigroup of the semigroup. Properties of a Γ– semigroup follow of it's generating semigroup. For the future, Γ– semigroup will generate another Γ– semigroup which called dual Γ– semigroup.

Acknowledgments

This article is funded by the DIPA Faculty Sains and Mathematics Undip by number: 4904/UN7.5.8/PP/2019.

References

[1] Sen, M.K. (1984). *On Γ–Semigroup, Proc. Of International Conference On Algebra and it's Application* (*New Delhi 1981*). *Lecture Note in Pure and Applied Mathematics* 1991, Decker, Newyork, 1984 : 301 – 308.

[2] Sen, M.K, Saha, N.K. (1986), *On Γ–Semigroup I*, Bull. Calcuta Math. Soc. 78 : 180 – 186

[3] Saha, N.K. (1987), *On Γ– Semigroup II*, Bull Calcuta Math. Soc. 79 : 331 – 335

[4] Xchilleri, Thanas. (2010), *Completely Regular Γ–Semigroup*, International Journal of Algebra Vol. 4, number 20 : 995 – 1002.

[5] Jantanan, W and Changpas, T. (2015). *On (m,n) – Regularity of Γ–Semigroup*, Thai Journal of Math. Vol 13, number 1 : 137 – 145.

[6] Chinram, R and Jirojkul, C. (2007). *On Bi – Γ– Ideals in Γ–Semigroup,* Songklanakarin J. Sci. Technol. 29(1) : 231 – 234.

□ – semigroup generated by a semigroup

ORIGINALITY REPORT

16%	11%	11%	7%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	smmm.unipv.it Internet Source	1%
2	www.mathlab.mtu.edu Internet Source	1%
3	Submitted to SAE Institute, London Student Paper	1%
4	coek.info Internet Source	1%
5	www.emis.de Internet Source	1%
6	Niovi Kehayopulu, Michael Tsingelis. "Semigroup actions on ordered groupoids", Mathematica Slovaca, 2013 Publication	1%
7	Submitted to School of Business and Management ITB Student Paper	1%
8	www.ijpam.eu Internet Source	1%

9	Drnovsek, R.. "On transitive linear semigroups", Linear Algebra and Its Applications, 20000115 Publication	1 %
10	Submitted to Universiti Putra Malaysia Student Paper	1 %
11	Submitted to Gyeongsang National University Student Paper	1 %
12	drops.dagstuhl.de Internet Source	1 %
13	Submitted to essex Student Paper	1 %
14	www.aclweb.org Internet Source	1 %
15	www.sweetstudy.com Internet Source	1 %
16	W. D. Munn. "Regular ω-semigroups", Glasgow Mathematical Journal, 01/1968 Publication	1 %
17	journalofinequalitiesandapplications.springeropen.com Internet Source	1 %
18	Niovi Kehayopulu. "Generalized ideal elements in poe-semigroups", Semigroup Forum, 1982 Publication	<1 %

19	S. Lajos. "(m, n)-Ideal characterizations of certain classes of semigroups", Lecture Notes in Mathematics, 1981 Publication	<1 %
20	www.researchmathsci.org Internet Source	<1 %
21	airccse.org Internet Source	<1 %
22	Manoj Siripitukdet, Aiyared Iampan. "The least regular order with respect to a regular congruence on ordered Γ-semigroups", Acta Mathematica Sinica, English Series, 2011 Publication	<1 %

Exclude quotes	On	Exclude matches	Off
Exclude bibliography	On		

□ – semigroup generated by a semigroup

GRADEMARK REPORT

FINAL GRADE

/100

GENERAL COMMENTS

Instructor

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

THE MINISTRY OF RESEARCH, TECHNOLOGY, AND HIGHER EDUCATION
THE REPUBLIC OF INDONESIA

DIPONEGORO UNIVERSITY
FACULTY OF SCIENCE AND MATHEMATICS

RECTOR'S DECREE NUMBER : 759/UN7.P/HK/2019

CERTIFICATE

THIS IS TO CERTIFY THAT

YD. Sumanto, M.Si

as

PRESENTER

In the 9th International Seminar on New Paradigm and Innovation on Natural Science and Its Application (9th ISNPINSA)

Held on 22 October 2019 at Gets Hotel, Semarang, Indonesia
with paper entitled as follows:

Γ – semigroup generated by a semigroup

DEAN OF FSM UNDIP

Prof. Dr. Widowati, S.Si, M.Si
NIP. 196902141994032002

9th ISNPINSA COMMITTEE CHAIRMAN

Dr. Suryono, M.Si
NIP. 197306301998021001