Journal of Physics Conference Series

The 11th Biennial Conference on Classical and Quantum Relativistic Dynamics of Particles and Fields



VALUES 1278-2019

4-1 June 2018 Wester, Technik, Masica

Norte Lave

The open access journal for conference proceedings

lopsalence.org/ jpcs

IOP Publishing

PAPER • OPEN ACCESS

The Third International Conference on Combinatorics, Graph Theory, and Network Topology 2019

To cite this article: 2020 J. Phys.: Conf. Ser. 1538 011001

View the article online for updates and enhancements.



This content was downloaded from IP address 101.128.81.21 on 19/09/2021 at 14:25

ICCGANT 2019

Journal of Physics: Conference Series

1538 (2020) 011001 doi:10.1088/1742-6596/1538/1/011001

IOP Publishing

The Third International Conference on Combinatorics, Graph Theory, and Network Topology 2019

Dafik

Editor in Chief of International Conference on Combinatorics, Graph Theory, and Network Topology 2019 E-mail: d.dafik@unej.ac.id

We would like to express our gratitude to all participant who were joining "The Third International Conference on Combinatorics, Graph Theory, and Network Topology (ICCGANT)". It is the 3rd International conference held by the CGANT Research Group held by University of Jember in cooperation with Indonesian Combinatorics Society (INACOBMS) on 26-27 October 2019. The conference is held to welcome participants from many countries, with broad and diverse research interests of mathematics especially combinatorial study. The mission is to become an annual international forum in the future, where, civil society organization and representative, research students, academics and researchers, scholars, scientist, teachers and practitioners from all over the world could meet in and exchange an idea to share and to discuss theoretical and practical knowledge about mathematics and its applications. The aim of the third conference is to present and discuss the latest research that contributes to the sharing of new theoretical, methodological and empirical knowledge and a better understanding in the area mathematics, application of mathematics as well as mathematics education. The themes of this conference are as follows:

(1) Connection of distance to other graph properties, (2) Degree/diameter problem, (3) Distance-transitive and distance-regular graphs, (4) Metric dimension and related parameters, (5) Cages and eccentric graphs, (6) Cycles and factors in graphs, (7) Large graphs and digraphs, (8) Spectral Techniques in graph theory, (9) Ramsey numbers, (10) Dimensions of graphs, (11) Communication networks, (12) Coding theory, (13) Cryptography, (14) Rainbow connection, (15) Graph labelings and coloring, (16) Applications of graph theory The topics are not limited to the above themes but they also include the mathematical application research of interest in general including mathematics education, such as: (1) Applied Mathematics and Modelling, (2) Applied Physics: Mathematical Physics, Biological Physics, Chemistry Physics, (3) Applied Engineering: Mathematical Engineering, Mechanical engineering, Informatics Engineering, Civil Engineering, (4) Statistics and Its Application, (5) Pure Mathematics (Analysis, Algebra and Geometry), (6) Mathematics Education, (7) Literacy of Mathematics, (8) The Use of ICT Based Media In Mathematics Teaching and Learning, (9) Technological, Pedagogical, Content Knowledge for Teaching Mathematics, (10) Students Higher Order Thinking Skill of Mathematics, (11) Contextual Teaching and Realistic Mathematics, (12) Science, Technology, Engineering, and Mathematics Approach, (13) Local Wisdom Based Education: Etnomathematics, (14) Showcase of Teaching and Learning of Mathematics, (15) The 21st Century Skills: The Integration of 4C Skill in Teaching Math.



ICCGANT 2019

Journal of Physics: Conference Series

IOP Publishing **1538** (2020) 011001 doi:10.1088/1742-6596/1538/1/011001

There were 250 participants in ICCGANT 2019, consist of research students, academics and researchers, scholars, scientist, teachers and practitioners from many countries. The selected papers to be published on IOP Conference Series: Journal of Physics are **114** papers.

On behalf of the organizing committee, finally we gratefully acknowledge the support from the University of Jember of this conference. We would also like to extend our thanks to all lovely participants who have been joining this unforgettable and valuable event.

Prof. Drs. Dafik, M.Sc., Ph.D.

ICCGANT 2019

Journal of Physics: Conference Series

1538 (2020) 011001 doi:10.1088/1742-6596/1538/1/011001

IOP Publishing

THE COMMITTEES

Honorary Advisory Committee:

Assoc Prof. Moch. Hasan	Rector of the University of Jember
Assoc Prof. Zulfikar	Vice Rector of the University of Jember
Assoc Prof. Wachyu Subhan	Vice Rector of the University of Jember
Prof. M. Sulthon	Vice Rector of the University of Jember

Organizing Committee:

Prof. DafikChairpersonIka Hesti AgustinSecretary

Editorial Board

Arika Indah Kristiana	Uni
Ridho Alfarisi	Uni
Rafiantika Megahnia Prihandini	Unive
Ermita Rizky Albirri	Uni
Robiatul Adawiyah	Uni
Elsa Yuli Kurniawati	Uni
Rosanita Nisviasari	Uni
Dwi Agustin Retno Wardani	IKI

University of Jember, Indonesia University of Jember, Indonesia Iniversity of Jember, Indonesia University of Jember, Indonesia University of Jember, Indonesia University of Jember, Indonesia INIP PGRI Jember, Indonesia

Scientific Committee and Reviewers

Joe Ryan Yuqing Lin M. Venkatachalam Edy Tri Baskoro Guillermo Pineda-Villavicencio Slamin Ali Ahmad Roslan Hasni Kiki A. Sugeng **Rinovia Simajuntak** Hilda Assiyatun Liliek Susilowati **Diary Indriati** Syaiful Bukhori Antonius Cahya Prihandoko Bambang Sujanarko Khairul Anam

University of Newcastle, Australia University of Newcastle, Australia Kongunadu Arts And Science College, India Institut Teknologi Bandung, Indonesia Federation University Australia, Australi University of Jember, Indonesia Jazan University, Saudi Arabia Universiti Malaysia Terengganu, Malaysia University of Indonesia, Indonesia Institut Teknologi Bandung, Indonesia Institut Teknologi Bandung, Indonesia Universitas Airlangga, Indonesia Universitas Sebelas Maret, Indonesia University of Jember, Indonesia University of Jember, Indonesia University of Jember, Indonesia University of Jember, Indonesia

ICCGANT 2019

Journal of Physics: Conference Series

IOP Publishing **1538** (2020) 011001 doi:10.1088/1742-6596/1538/1/011001

The committees of the Second International Conference on Combinatorics, Graph Theory, and Network Topology would like to express gratitude to all Committees for the volunteering support and contribution in the editing and reviewing process.



Journal of Physics: Conference Series, Volume 1538, 2020 - IOPscience

Digital Repository Universitas Jember

Table of contents

Volume 1538

2020

♦ Previous issue
 Next issue ▶

3rd International Conference on Combinatorics, Graph Theory, and Network Topology 26-27 October 2019, East Java, Indonesia

Accepted papers received: 14 April 2020 Published online: 19 June 2020

Open all abstracts

Preface

OPEN ACCESS			011001
The Third Internat Topology 2019	ional Conference	on Combinatorics, Graph Theory, and Network	
+ Open abstract	View article	PDF	
OPEN ACCESS			011002
Peer review statem	nent		
+ Open abstract	View article	🔁 PDF	
Combinatorics			
OPEN ACCESS			012001
On total edge irreg	gularity strength of	Etadpole chain graph $Tr(6, n)$	
E Nurdini, I Rosyida	and Mulyono		
	Tiew article	PDF	
OPEN ACCESS			012002
The sigma chroma	tic number of the	Sierpiński gasket graphs and the Hanoi graphs	
A D Garciano, R M M	Marcelo, M J P Ruiz	and M A C Tolentino	
+ Open abstract	Tiew article	PDF	
OPEN ACCESS			012003
Sigma chromatic r	number of graph co	pronas involving complete graphs	
A D Garciano, M C T This site uses cookies secoperPatractand (۲ Lagura and R M M s. By continuing to u Cookiঠsipwlærticle	arcelo se this site you agree to our use of cookies. To find out more, PDF	8

, 8:29 PM	Journ	nal of Physics: Conference Series, Volume 1538, 2020 - IOPscience	
OPEN ACCESS	bigitai itop		0
Twin chromatic i	ndices of some grap	bhs with maximum degree 3	0.
J D Tolentino, R M	Marcelo and M A C T	Tolentino	
	View article	PDF	
1			
OPEN ACCESS			01
Colour segmenta Random Walker	tion of Gram-Negat	tive bacteria using graph Quadratic Form and	
B D Satoto, I Utoyo	and R Rulaningtyas		
	View article	PDF	
OPEN ACCESS			01
The modification	of caesar cryptosys	stem based on binary vertices colouring	
K A Santoso, I H A	gustin and R M Prihar	ndini	
+ Open abstract	View article	PDF	
OPEN ACCESS			01
Characteristic po	lynomial of anti-adj	acency matrix of directed cyclic friendship graph	
N Anzana, S Amina	ah, S Utama and D R S	Silaban	
+ Open abstract	View article	PDF	
OPEN ACCESS			01
The matrix Jacob	oson graph of fields		
S Humaira, P Astut	i, I Muchtadi-Alamsya	ah and A Erfanian	
+ Open abstract	View article	🔁 PDF	
OPEN ACCESS			01
On the set chrom	atic number of the j	oin and comb product of graphs	
B C L Felipe, A D	Garciano and M A C T	Tolentino	
	View article	🔁 PDF	
OPEN ACCESS			01
On Ramsey $(P_3,$	C ₇)-minimal graphs	3	
G A Muttaqin, D R	ahmadani, Purwanto a	nd I M Sulandra	
	View article	🔁 PDF	
OPEN ACCESS			01
	C) minimal graphs	s for certain order	
On Ramsey (P_3 ,	C ₆)-infinitial graphs		

OPEN ACCESS 📙	ligital Rep	ository Universitas Jemper	0
On spectra of squa	are edge-corona gr	aphs	
S R Zulkarnain and	Rinurwati		
+ Open abstract	View article	🔁 PDF	
OPEN ACCESS			0
Application of the for an expatriate a	e local antimagic to ssignment	tal labeling of graphs to optimise scheduling system	
W Utami, K Wijaya	and Slamin		
+ Open abstract	View article	🔁 PDF	
OPEN ACCESS			0
Local super antim	agic total vertex co	oloring of some wheel related graphs	
S A Pratama, S Setia	wani and Slamin		
+ Open abstract	View article	PDF	
OPEN ACCESS			0
Odd harmonious 1	abeling on squid g	raph and double squid graph	
F Febriana and K A	Sugeng		
	View article	🔁 PDF	
OPEN ACCESS			0
Unicyclic Ramsey	$V(P_3, P_n)$ -minimal	graphs obtained from trees in the same class	
D Rahmadani, H As	siyatun and E T Bask	toro	
+ Open abstract	View article	🔁 PDF	
OPEN ACCESS			0
On the super \mathcal{H}_{-d}	ecomposition loca	l antimagic total labeling of subdivision graph	0
S L Fauziah, Dafik,	I H Agustin and R Al		
+ Open abstract	View article	🔁 PDF	
OPEN ACCESS			0
Elegant labeling o	of some graphs		
R M Prihandini, Daf	ĩk, I H Agustin, R Al	farisi and R Adawiyah	
	View article	🔁 PDF	
OPEN ACCESS			0
The upper bound	of vertex local anti	magic edge labeling on graph operations	
Ika Hesti Agustin, D	afik, Marsidi and E Y	Y Kurniawati	

Digital		
OPEN ACCESS	Repository Universitas Jember	012
On the local (adjacency) met	tric dimension of split related wheel graphs	
E R Albirri, Dafik, I H Agustin,	R Adawiyah, R Alfarisi and R M Prihandini	
+ Open abstract	article 🔁 PDF	
OPEN ACCESS		012
On the local antimagic vertex	x coloring of sub-devided some special graph	
Dafik, I H Agustin, Marsidi and	E Y Kurniawati	
← Open abstract	article 🄁 PDF	
OPEN ACCESS		012
Properties of cartesian multip fuzzy graphs and complement	plication operations in complete fuzzy graphs, effective nt fuzzy graphs	
T Yulianto, N Hayati, I H Agusti	n, R Amalia, Faisol, Kuzairi and B Irwansyah	
← Open abstract	article 🔀 PDF	
OPEN ACCESS		012
On the local multiset dimens	sion of graph with homogenous pendant edges	
R Adawiyah, Dafik, I H Agustin	, R M Prihandini, R Alfarisi and E R Albirri	
+ Open abstract ≣ [™] View a	article 🔁 PDF	
Applied Sciences		
Applied Sciences OPEN ACCESS Implementation of valuess f	or elegation of parkingen's disease	012
Applied Sciences OPEN ACCESS Implementation of xgboost f	For classification of parkinson's disease	012
Applied Sciences OPEN ACCESS Implementation of xgboost ff G Abdurrahman and M Sintawat	for classification of parkinson's disease	012
Applied Sciences OPEN ACCESS Implementation of xgboost f G Abdurrahman and M Sintawat + Open abstract Uiew a	For classification of parkinson's disease ii article PDF	012
Applied Sciences OPEN ACCESS Implementation of xgboost f G Abdurrahman and M Sintawat + Open abstract OPEN ACCESS Effect of addition waste bott environmentally friendly pay	For classification of parkinson's disease i article PDF le and fly ash variation to compressive strength ving block	012
Applied Sciences OPEN ACCESS Implementation of xgboost f G Abdurrahman and M Sintawat + Open abstract OPEN ACCESS Effect of addition waste bott environmentally friendly pay A I N Diana and D Deshariyanto	For classification of parkinson's disease ii article PDF Ie and fly ash variation to compressive strength Ving block	012
Applied Sciences OPEN ACCESS Implementation of xgboost f G Abdurrahman and M Sintawat + Open abstract OPEN ACCESS Effect of addition waste bott environmentally friendly pay A I N Diana and D Deshariyanto + Open abstract USA	For classification of parkinson's disease ii article It and fly ash variation to compressive strength ving block article PDF	012
Applied Sciences OPEN ACCESS Implementation of xgboost f G Abdurrahman and M Sintawat + Open abstract OPEN ACCESS Effect of addition waste bott environmentally friendly pay A I N Diana and D Deshariyanto + Open abstract View a OPEN ACCESS	For classification of parkinson's disease i article PDF In the and fly ash variation to compressive strength ving block article PDF	012
Applied Sciences OPEN ACCESS Implementation of xgboost f G Abdurrahman and M Sintawat + Open abstract OPEN ACCESS Effect of addition waste bott environmentally friendly pay A I N Diana and D Deshariyanto + Open abstract OPEN ACCESS The application of the factor implementation in companie	For classification of parkinson's disease i article Is and fly ash variation to compressive strength ving block article PDF analysis method to determine the performance of IT s based on the IT balanced scorecard measurement method	012
Applied Sciences OPEN ACCESS Implementation of xgboost f G Abdurrahman and M Sintawat + Open abstract OPEN ACCESS Effect of addition waste bott environmentally friendly pay A I N Diana and D Deshariyanto + Open abstract OPEN ACCESS The application of the factor implementation in companie W Sardjono, E Selviyanti and W	For classification of parkinson's disease i article PDF Is analysis method to determine the performance of IT s based on the IT balanced scorecard measurement method IG Perdana	012

OFFE Nite GREE So okies. By continuing to use this site you agree to our use of cookies. To find out more, see our Privacy and Cookies policy.

012027

1, 8:29 PM	Jourr	nal of Physics: Conference Series, Volume 1538, 2020 - IOPscience	
Evaluation mode regresion analysi	Docknowledge man is at the corporation	agement systems implementation using factor analysis	s and
W Sardjono, E Selv	viyanti and W G Perda	18	
	View article	🔁 PDF	
OPEN ACCESS			012
Properties of cor	ntent semimodules		
Z Ni'mah, M Hafiy	rusholeh and W D Utan	ni	
	Tiew article	PDF	
OPEN ACCESS			012
Enviromental ho resources using 3	using planning with 3D in Sumenep rege	rainwater harvesting system as clean water ncy	
S Fansuri and N Za	ainah		
	View article	🔁 PDF	
ODEN ACCESS			0.1/
Navigation and g system using ens	guidance control sys semble kalman filter	tem of UNUSAITS AUV based on dynamical square root	01.
T Herlambang, Sub	ochan and H Nurhadi		
+ Open abstract	View article	🔁 PDF	
OPEN ACCESS			01
Measurement of Indonesia	maturity of small m	edium agroindustry business processes in Jember,	
W Utami, N G Khr	risnabudi, L Farida, M	Apriono, E S Utami, Sudarsih, T A Gumanti and D A R Wula	ndari
+ Open abstract	View article	🔁 PDF	
OPEN ACCESS			012
Fitting the rice p generalized estin	roduction model usi nating equation with	ng generalized additive mixed model and shiny web application	
A S Darmawan, D	Anggraeni and I M Tir	ta	
	View article	PDF	
OPEN ACCESS			012
Modification of	Chaos Game with va	ariation of compression ratio	011
K D Purnomo, M H	H Dewi and B Juliyanto		
	View article	🔁 PDF	
OPEN ACCESS			01
Estimation of W This site uses cook Filter in PMI Sur see our Privacy and	hole Blood(WB) and ies. By continuing to us rabaya I Cookies policy.	d Anti-Hemophiliate Factor using Extended Kalman se this site you agree to our use of cookies. To find out more,	012

+ Open abstract			
- open abbilati	View article	🔁 PDF	
OPEN ACCESS			0
Trajectory Estimation	ation of Autonomou	us Surface Vehicle Using Extended Kalman Filter	
T. Herlambang, D.	Adzkiya and H. Nurha	ndi	
+ Open abstract	View article	🔁 PDF	
OPEN ACCESS			0
Profitability estir	nation of a Compan	y in PT.ABCD using extended kalman filter	
M Y Anshori, T He	erlambang, D F Karya,	A Muhith and R A Rasyid	
	View article	PDF	
OPEN ACCESS		IERS/	0
The commutator particle's hamilto	of raising and lowe	ring operators for angular momentum to the free	
A F Sugihartin, B S	Supriadi, Subiki, V Riz	zqiyah, N Rizky and F Utami	
+ Open abstract	View article	🔁 PDF	
OPEN ACCESS			0
Complete solutio number	ons of particle in thre	ee dimensional box with variations in main quantum	
B Supriadi, L Nura	ini, A S R Maulani, D	D Damayanti, A F Sugihartin and M I Baihaqi	
+ Open abstract	View article	🔁 PDF	
+ Open abstract	View article	🔁 PDF	0
+ Open abstract OPEN ACCESS Analysis of the re transmission coefficient	View article elationship between fficient and the refle	PDF the distance barriers GaAs and GaAs with the ection coefficient	0
+ Open abstract OPEN ACCESS Analysis of the re transmission coet B Supriadi, N Rizky	View article elationship between fficient and the refle y, Yushardi, N C Agus	PDF the distance barriers GaAs and GaAs with the ection coefficient stin, S Epiningtiyas and M S Makmun	0
 Open abstract OPEN ACCESS Analysis of the retransmission coefficient B Supriadi, N Rizk; Open abstract 	View article elationship between fficient and the refle y, Yushardi, N C Agus	PDF the distance barriers GaAs and GaAs with the ection coefficient stin, S Epiningtiyas and M S Makmun PDF	0
 Open abstract OPEN ACCESS Analysis of the retransmission coef B Supriadi, N Rizky Open abstract OPEN ACCESS 	View article elationship between fficient and the refle y, Yushardi, N C Agus	PDF the distance barriers GaAs and GaAs with the ection coefficient stin, S Epiningtiyas and M S Makmun PDF	0
 + Open abstract OPEN ACCESS Analysis of the ratransmission coe B Supriadi, N Rizky + Open abstract OPEN ACCESS Numerical simulation 	View article elationship between fficient and the refle y, Yushardi, N C Agus View article ation of mass in cor	 PDF the distance barriers GaAs and GaAs with the ection coefficient stin, S Epiningtiyas and M S Makmun PDF re decay of radioactive substance Thorium-232 series 	0
 Open abstract OPEN ACCESS Analysis of the retransmission coef B Supriadi, N Rizk + Open abstract OPEN ACCESS Numerical simular Yushardi, B Supriadi 	View article elationship between fficient and the refle y, Yushardi, N C Agus View article ation of mass in cor di, D S Tresnowati and	 PDF the distance barriers GaAs and GaAs with the ection coefficient stin, S Epiningtiyas and M S Makmun PDF re decay of radioactive substance Thorium-232 series a Z R Ridlo 	0
 + Open abstract OPEN ACCESS Analysis of the retransmission coef B Supriadi, N Rizk + Open abstract OPEN ACCESS Numerical simulation Yushardi, B Supriadient + Open abstract 	View article elationship between fficient and the refle y, Yushardi, N C Agus View article ation of mass in cor di, D S Tresnowati and	 PDF the distance barriers GaAs and GaAs with the ection coefficient stin, S Epiningtiyas and M S Makmun PDF re decay of radioactive substance Thorium-232 series I Z R Ridlo PDF 	0
 + Open abstract OPEN ACCESS Analysis of the retransmission coe B Supriadi, N Rizky + Open abstract OPEN ACCESS Numerical simulation Yushardi, B Supriadie + Open abstract OPEN ACCESS 	View article elationship between fficient and the refle y, Yushardi, N C Agus View article ation of mass in cor di, D S Tresnowati and View article	 PDF the distance barriers GaAs and GaAs with the ection coefficient stin, S Epiningtiyas and M S Makmun PDF e decay of radioactive substance Thorium-232 series I Z R Ridlo PDF 	0
 + Open abstract OPEN ACCESS Analysis of the ratransmission coefficient B Supriadi, N Rizky + Open abstract OPEN ACCESS Numerical simulation Yushardi, B Supriadient + Open abstract OPEN ACCESS The effect of leration 	 View article elationship between fficient and the reflection y, Yushardi, N C Agus View article ation of mass in cordition of mass in cordition Tresnowati and View article Ak foam and kapok a 	 PDF the distance barriers GaAs and GaAs with the ection coefficient stin, S Epiningtiyas and M S Makmun PDF re decay of radioactive substance Thorium-232 series I Z R Ridlo PDF 	0
 + Open abstract OPEN ACCESS Analysis of the ratransmission coe B Supriadi, N Rizky + Open abstract OPEN ACCESS Numerical simulation Yushardi, B Supriadion + Open abstract OPEN ACCESS The effect of leration Dwi Nurtanto, Herri 	 View article elationship between fficient and the reflective y, Yushardi, N C Agus View article ation of mass in cordination of mas	 PDF the distance barriers GaAs and GaAs with the ection coefficient stin, S Epiningtiyas and M S Makmun PDF re decay of radioactive substance Thorium-232 series a Z R Ridlo PDF as a silencer on lightweight concrete sanuddin, Zahra Hikmah Hayati and Mukhlisin 	0
 + Open abstract OPEN ACCESS Analysis of the ratransmission coer B Supriadi, N Rizky + Open abstract OPEN ACCESS Numerical simulation Yushardi, B Supriadion + Open abstract OPEN ACCESS The effect of leration Dwi Nurtanto, Herrical 	 View article elationship between fficient and the reflective y, Yushardi, N C Agus View article ation of mass in cordination of mas	 PDF the distance barriers GaAs and GaAs with the ection coefficient stin, S Epiningtiyas and M S Makmun PDF re decay of radioactive substance Thorium-232 series A Z R Ridlo PDF as a silencer on lightweight concrete sanuddin, Zahra Hikmah Hayati and Mukhlisin 	

OPEN ACCESS DIGITAL REPOSITORY UNIVERSITIES JEEDE Using factor analysis and regression analysis to develop mathematic modeling to support online application implementation in transportation business W Sardjono, E Selviyanti and W G Perdana + Open abstract Image to the entropy of the entropy	, 8:29 PM	Jour	nal of Physics: Conference Series, Volume 1538, 2020 - IOPscience	
Using factor analysis and regression analysis to develop mathematic modeling to support online application implementation in transportation business W Sardjono, E Sclviyanti and W G Perdana + Open abstract	OPEN ACCESS D	igital Rep	ository Universitas Jember	01
online application implementation in transportation business W Sardjono, E Selviyanti and W G Perdana + Open abstract V Vew article PDF OPEN ACCESS OP	Using factor analy	sis and regression	analysis to develop mathematic modeling to support	
W Sardjono, E Sclviyanti and W G Perdana + Open abstract I View article PDF OPEN ACCESS (Analysis of magic table in completin of closed flow circuits (Analysis of magic table in completin of closed flow circuits B II Antoro, B Supriadi, T Prihandono, M R Mutaqin, N II Azizah and S Epiningtiyas (Analysis of magic table in completin of closed flow circuits B I Antoro, B Supriadi, T Prihandono, M R Mutaqin, N II Azizah and S Epiningtiyas (Analysis of magic table in completin of closed flow circuits • Open abstract I View article PDF OPEN ACCESS (Comparison between Neural Network (NN) and Adaptive Neuro Fuzzy Inference System (ANFIS) on sunlight intensity prediction based on air temperature and humidity D Rahmalia, T Herlambang, A S Kamil, R A Rasyid, F Yudianto, L Muzdalifah and E F Kurnjawati + Open abstract I View article PDF OPEN ACCESS (Measuring maturity level of information technology governance at the television broadcasting company Erma Selviyanti and Wahyu Sardjono (PDF) OPEN ACCESS (Modelling of an electromagnetic wave radiation exposure on a smartphone by using the mat lab program S H B Prastowo, T Prihandono, N Fadilah, S Bahri and A Ariyani (Optimal control of microalgae growth using linear quadratic regulator method with firefly algorithm optimization Suci Yongki Setyowati and Mardlijah (Open abstract Vi	online application	implementation in	n transportation business	
 Open abstract I view article PDF OPEN ACCESS <li< th=""><th>W Sardjono, E Selviy</th><th>anti and W G Perda</th><th>na</th><th></th></li<>	W Sardjono, E Selviy	anti and W G Perda	na	
OPEN ACCESS (Analysis of magic table in completin of closed flow circuits (B II Antoro, B Supriadi, T Prihandono, M R Muttaqin, N II Azizah and S Epiningtiyas (+ Open abstract Image: View article PDF OFEN ACCESS (Comparison between Neural Network (NN) and Adaptive Neuro Fuzzy Inference System (ANFIS) on sunlight intensity prediction based on air temperature and humidity (D Rabmalia, T Herlambang, A S Kamil, R A Rasyid, F Yudianto, L Muzdalifah and E F Kurniawati + + Open abstract Image: View article PDF OPEN ACCESS (Measuring maturity level of information technology governance at the television broadcasting company (Erma Selviyanti and Wahyu Sardjono + (+ Open abstract Image: View article PDF OPEN ACCESS ((Modelling of an electromagnetic wave radiation exposure on a smartphone by using the mat lab program (S H B Prastowo, T Prihandono, N Fadilah, S Bahri and A Ariyani + (• Open abstract Image: View article PDF (OPEN ACCESS ((((Optimal control of microalgae growth using linear quadrati		Tiew article	🔁 PDF	
Analysis of magic table in completin of closed flow circuits B H Antoro, B Supriadi, T Prihandono, M R Muttaqin, N H Azizah and S Epiningtiyas + Open abstract View article OPEN ACCESS Comparison between Neural Network (NN) and Adaptive Neuro Fuzzy Inference System (ANFIS) on sunlight intensity prediction based on air temperature and humidity D Rahmalia, T Herlambang, A S Kamil, R A Rasyid, F Yudianto, L Muzdalifah and E F Kurniawati + Open abstract View article PDF OPEN ACCESS Measuring maturity level of information technology governance at the television broadcasting company Erna Sclviyanti and Wahyu Sardjono + Open abstract I View article PDF OPEN ACCESS Modelling of an electromagnetic wave radiation exposure on a smartphone by using the mat lab program S H B Prastowo, T Prihandono, N Fadilah, S Bahri and A Ariyani + Open abstract I'view article PDF OPEN ACCESS Open abstract I'view article PDF OPEN ACCESS Open abstract I'view article PDF OPEN ACCESS Open abstract OPEN ACCESS <p< td=""><td>OPEN ACCESS</td><td></td><td></td><td>0</td></p<>	OPEN ACCESS			0
B H Antoro, B Supriadi, T Prihandono, M R Muttaqin, N H Azizah and S Epiningtiyas + Open abstract ♥ View article PDF OPEN ACCESS Comparison between Neural Network (NN) and Adaptive Neuro Fuzzy Inference System (ANFIS) on sunlight intensity prediction based on air temperature and humidity D Rahmalia, T Herlambang, A S Kamil, R A Rasyid, F Yudianto, L Muzdalifah and E F Kurniawati + Open abstract ♥ View article PDF OPEN ACCESS Measuring maturity level of information technology governance at the television broadcasting company Erna Selviyanti and Wahyu Sardjono + Open abstract ♥ View article PDF OPEN ACCESS Modelling of an electromagnetic wave radiation exposure on a smartphone by using the mat lab program S H B Prastowo, T Prihandono, N Fadilah, S Bahri and A Ariyani + Open abstract ♥ View article PDF OPEN ACCESS Optimal control of microalgae growth using linear quadratic regulator method with firefly algorithm optimization Suci Yongki Setyowati and Mardiljah + Open abstract ♥ View article ♥ PDF OPEN ACCESS OPEN ACCESS OPEN ACCESS COPI ACCESS COPI ACCESS OPEN ACCESS OPE	Analysis of magic	table in completin	n of closed flow circuits	
+ Open abstract Image: View article Image: PDF OPEN ACCESS Comparison between Neural Network (NN) and Adaptive Neuro Fuzzy Inference System (ANFIS) on sunlight intensity prediction based on air temperature and humidity D D Rahmalia, T Herlambang, A S Kamil, R A Rasyid, F Yudianto, L Muzdalifah and E F Kurniawati + + Open abstract Image: View article Image: PDF OPEN ACCESS Measuring maturity level of information technology governance at the television broadcasting company Image: PDF OPEN ACCESS Image: PDF	B H Antoro, B Supria	adi, T Prihandono, M	1 R Muttaqin, N H Azizah and S Epiningtiyas	
OPEN ACCESS (ANFIS) on sunlight intensity prediction based on air temperature and humidity D Rahmalia, T Herlambang, A S Kamil, R A Rasyid, F Yudianto, L Muzdalifah and E F Kumiawati + Open abstract Image: View article Image: PDF OPEN ACCESS Measuring maturity level of information technology governance at the television broadcasting company Erna Selviyanti and Wahyu Sardjono + Open abstract Image: View article Image: PDF OPEN ACCESS Modelling of an electromagnetic wave radiation exposure on a smartphone by using the mat lab program S H B Prastowo, T Prihandono, N Fadilah, S Bahri and A Ariyani + Open abstract Image: View article Image: PDF OPEN ACCESS OPEN ACCESS Modelling of an electromagnetic wave radiation exposure on a smartphone by using the mat lab program S H B Prastowo, T Prihandono, N Fadilah, S Bahri and A Ariyani + Open abstract Image: View article Image: PDF OPEN ACCESS Optimal control of microalgage growth using linear quadratic regulator method with firefly algorithm optimization Suci Yongki Setyowati and Mardlijah + Open abstract Image: PDF OPEN ACCESS	+ Open abstract	Tiew article	PDF	
Comparison between Neural Network (NN) and Adaptive Neuro Fuzzy Inference System (ANFIS) on sunlight intensity prediction based on air temperature and humidity D Rahmalia, T Herlambang, A S Kamil, R A Rasyid, F Yudianto, L Muzdalifah and E F Kumiawati + Open abstract	OPEN ACCESS			0
D Rahmalia, T Herlambang, A S Kamil, R A Rasyid, F Yudianto, L Muzdalifah and E F Kurniawati + Open abstract View article PDF OPEN ACCESS Measuring maturity level of information technology governance at the television broadcasting company Erna Selviyanti and Wahyu Sardjono + Open abstract View article PDF OPEN ACCESS Modelling of an electromagnetic wave radiation exposure on a smartphone by using the mat lab program S H B Prastowo, T Prihandono, N Fadilah, S Bahri and A Ariyani + Open abstract View article PDF OPEN ACCESS OPEN ACCESS Optimal control of microalgae growth using linear quadratic regulator method with firefly algorithm optimization Suci Yongki Setyowati and Mardlijah + Open abstract View article PDF OPEN ACCESS The base matrix of hermitian operator order n<4 S Epiningtiyas, B Supriadi, T Prihandono, B H Saputra, M S Makmun and B H Antono + Open abstract View article PDF OPEN ACCESS De matrix of hermitian operator order n<4 S Epiningtiyas, B Supriadi, T Prihandono, B H Saputra, M S Makmun and B H Antono + Open abstract View article PDF OPEN ACCESS De matrix of hermitian operator order n<4 S Epiningtiyas, B Supriadi, T Prihandono, B H Saputra, M S Makmun and B H Antono + Open abstract View article PDF OPEN ACCESS De matrix of hermitian operator order n<4 S Epiningtiyas, B Supriadi, T Prihandono, B H Saputra, M S Makmun and B H Antono + Open abstract View article PDF	Comparison betwee (ANFIS) on sunlig	en Neural Networ th intensity predic	k (NN) and Adaptive Neuro Fuzzy Inference System tion based on air temperature and humidity	
+ Open abstract Image: View article Image: PDF OPEN ACCESS Measuring maturity level of information technology governance at the television broadcasting company Image: PDF Erna Selviyanti and Wahyu Sardjono + Open abstract Image: PDF OPEN ACCESS Image: PDF Image: PDF Image:	D Rahmalia, T Herla	mbang, A S Kamil, I	R A Rasyid, F Yudianto, L Muzdalifah and E F Kurniawati	
OPEN ACCESS () Measuring maturity level of information technology governance at the television broadcasting company () Erna Selviyanti and Wahyu Sardjono () + Open abstract () Wew article () PDF () OPEN ACCESS () Modelling of an electromagnetic wave radiation exposure on a smartphone by using the mat lab program () S H B Prastowo, T Prihandono, N Fadilah, S Bahri and A Ariyani () + Open abstract () () () OPEN ACCESS () Optimal control of microalgae growth using linear quadratic regulator method with firefly algorithm optimization () Suci Yongki Setyowati and Mardlijah () + Open abstract () () OPEN ACCESS () OPEN ACCESS () Open abstract () () OPEN ACCESS () Open abstract () () <td>+ Open abstract</td> <td>View article</td> <td>🔁 PDF</td> <td></td>	+ Open abstract	View article	🔁 PDF	
Measuring maturity level of information technology governance at the television broadcasting company Image: Stream Selviyanti and Wahyu Sardjono + Open abstract Image: View article Image: PDF OPEN ACCESS Modelling of an electromagnetic wave radiation exposure on a smartphone by using the mat lab program Image: Stream Selviyanti S H B Prastowo, T Prihandono, N Fadilah, S Bahri and A Ariyani Image: PDF Image: Stream Selviyanti OPEN ACCESS Image: Stream Selviyanti Image: Stream Selviyanti Image: Stream Selviyanti OPEN ACCESS Image: Stream Selviyanti Image: Stream Selviyanti Image: Stream Selviyanti Image: Stream Selviyanti OPEN ACCESS Image: Stream Selviyanti Suci Yongki Setyowati and Mardlijah Image: Stream Selviyanti	OPEN ACCESS			0
Erna Selviyanti and Wahyu Sardjono + Open abstract View article PDF OPEN ACCESS Modelling of an electromagnetic wave radiation exposure on a smartphone by using the mat lab program S H B Prastowo, T Prihandono, N Fadilah, S Bahri and A Ariyani + Open abstract View article PDF OPEN ACCESS Optimal control of microalgae growth using linear quadratic regulator method with firefly algorithm optimization Suci Yongki Setyowati and Mardlijah + Open abstract View article PDF OPEN ACCESS The base matrix of hermitian operator order n<4 S Epiningtiyas, B Supriadi, T Prihandono, B H Saputra, M S Makmun and B H Antono + Open abstract View article PDF	Measuring maturit broadcasting comp	y level of informa bany	tion technology governance at the television	Ū
 + Open abstract	Erna Selviyanti and V	Wahyu Sardjono		
OPEN ACCESS Modelling of an electromagnetic wave radiation exposure on a smartphone by using the mat lab program S H B Prastowo, T Prihandono, N Fadilah, S Bahri and A Ariyani + Open abstract	+ Open abstract	View article	🔁 PDF	
Modelling of an electromagnetic wave radiation exposure on a smartphone by using the mat lab program S H B Prastowo, T Prihandono, N Fadilah, S Bahri and A Ariyani + Open abstract PDF OPEN ACCESS Optimal control of microalgae growth using linear quadratic regulator method with firefly algorithm optimization Suci Yongki Setyowati and Mardlijah + Open abstract <td>OPEN ACCESS</td> <td></td> <td></td> <td>0</td>	OPEN ACCESS			0
S H B Prastowo, T Prihandono, N Fadilah, S Bahri and A Ariyani + Open abstract	Modelling of an el mat lab program	ectromagnetic way	ve radiation exposure on a smartphone by using the	
 + Open abstract I View article PDF OPEN ACCESS Optimal control of microalgae growth using linear quadratic regulator method with firefly algorithm optimization Suci Yongki Setyowati and Mardlijah + Open abstract I View article PDF OPEN ACCESS OPEN ACCESS OPEN OPEN ACCESS (Comparison of the provided of the provided	S H B Prastowo, T Pr	rihandono, N Fadilał	n, S Bahri and A Ariyani	
OPEN ACCESS (Optimal control of microalgae growth using linear quadratic regulator method with firefly algorithm optimization (Suci Yongki Setyowati and Mardlijah (+ Open abstract (OPEN ACCESS (OPEN access (The base matrix of hermitian operator order n<4		Tiew article	🔁 PDF	
Optimal control of microalgae growth using linear quadratic regulator method with firefly algorithm optimization Suci Yongki Setyowati and Mardlijah + Open abstract Image: Control of microalgae growth using linear quadratic regulator method with firefly algorithm optimization OPEN ACCESS The base matrix of hermitian operator order n<4	OPEN ACCESS			0
Suci Yongki Setyowati and Mardlijah + Open abstract IView article PDF OPEN ACCESS The base matrix of hermitian operator order n<4 S Epiningtiyas, B Supriadi, T Prihandono, B H Saputra, M S Makmun and B H Antono + Open abstract IView article PDF OPEN ACCESS OPEN ACCESS OPEN ACCESS	Optimal control of firefly algorithm o	microalgae growt	th using linear quadratic regulator method with	V
 + Open abstract ✓ View article ✓ PDF OPEN ACCESS The base matrix of hermitian operator order n<4 S Epiningtiyas, B Supriadi, T Prihandono, B H Saputra, M S Makmun and B H Antono + Open abstract ✓ View article ✓ PDF 	Suci Yongki Setyowa	ti and Mardlijah		
OPEN ACCESS (The base matrix of hermitian operator order n<4		Tiew article	🔁 PDF	
OPEN ACCESS (The base matrix of hermitian operator order n<4				
S Epiningtiyas, B Supriadi, T Prihandono, B H Saputra, M S Makmun and B H Antono + Open abstract View article PDF OPEN ACCESS Description and B H Antono	The base matrix of	f hermitian operato	or order n<4	0
+ Open abstract View article PDF	S Epiningtiyas, B Su	priadi, T Prihandono	, B H Saputra, M S Makmun and B H Antono	
OPEN ACCESS	+ Open abstract	View article	PDF	
THIS SHE USES COURTES BY COULDMAN TO BEE THE CHE VOU STREET O OUR BEE AT SOAPLAST TO THAT OUR PASSA	OPEN ACCESS	By continuing to y	se this site you garee to our use of cookies. To find out more	0

+ Open abstract	View article	🔁 PDF	
OPEN ACCESS			0
Bias correction an	nd statistical downs	scaling of earth system models using quantile delta	
mapping (QDM) (BCCAQ)	and bias correction	a constructed analogues with quantile mapping reordering	g
F Fauzi, H Kuswant	to and R M Atok		
	Tiew article	🄁 PDF	
OPEN ACCESS			0
Spatial extreme n	nodeling using stud	lent t copula approach in Ngawi Regency	
M Fauziyah, Sutikn	o and J D T Purnomo		
	Tiew article	PDF	
OPEN ACCESS			0
Modeling the volu- supply, inflation,	atility of gross dom interest rate, and ex	nestic product based on the volatility of money xchange rate using the fractional cointegration model	
A Abdullah, H Kusy	wanto, D D Prastyo an	nd Suhartono	
	View article	🔁 PDF	
OPEN ACCESS			0
The performance distribution and E	evaluation of the b EPC	vivariate EWMAcontrol chart using CARL	Ū
Selly Acita, Muham	mad Mashuri and De	dy Dwi Prastyo	
	View article	🔁 PDF	
OPEN ACCESS			0
Three-parameter rate and maternal	bivariate gamma re mortality rate	egression model for analyzing under-five mortality	
G H Wenur, Purhad	i and A Suharsono		
+ Open abstract	Tiew article	PDF	
OPEN ACCESS			0
Analyzing the rol Indonesia and Jap	es of the construction	ion sector by using multiplier analyses: the cases of	
Ubaidillah Zuhdi			
▲ Open abstract	View article	🔁 PDF	
• Open abstract			

100 101 1 000110 101 10100	shuri and Thamah PO	ository Universitas Jember	
+ Open abstract	View article	PDF	
OPEN ACCESS			0
The simulation o	f weathering proces	ses in three different types of oil	
N Millah, K Nugra	heni and I Anggriani		
	Tiew article	🔁 PDF	
OPEN ACCESS			0
Three form fouri	er series estimator s	emiparametric regression for longitudinal data	
Kuzairi, Miswanto	and I Nyoman Budiant	tara	
✦ Open abstract	View article	PDF	
OPEN ACCESS			0
Recognition of p Function Neural	erson's character thr Network (RBFNN)	ough the shape of signature using Radial Basis method	
Faisol, Ahmad, Ha	lumatus Sakdiyah, Qur	ratul Aini, Kuzairi and Tony Yulianto	
+ Open abstract	Tiew article	PDF	
Sentiment analys	sis for Indonesia hot	el services review using optimized neural network	
D Apriliani, T Abio+ Open abstract	lin, E Sutanta, A Hamz	zah and O Somantri	
D Apriliani, T Abio+ Open abstract	lin, E Sutanta, A Hamz	zah and O Somantri 🔁 PDF	
 D Apriliani, T Abio + Open abstract OPEN ACCESS Semiparametric at truncated and for 	din, E Sutanta, A Hamz View article regression curve esti- urier series estimator	zah and O Somantri PDF imation for longitudinal data using mixed spline r	0
 D Apriliani, T Abio + Open abstract OPEN ACCESS Semiparametric at truncated and four A W Wening, I N B 	din, E Sutanta, A Hamz Uiew article regression curve esti- urier series estimator Budiantara and I Zain	zah and O Somantri PDF imation for longitudinal data using mixed spline r	0
 D Apriliani, T Abio Open abstract OPEN ACCESS Semiparametric retruncated and for A W Wening, I N E Open abstract 	din, E Sutanta, A Hamz View article regression curve esti- urier series estimator Budiantara and I Zain View article	eah and O Somantri PDF imation for longitudinal data using mixed spline r PDF	0
 D Apriliani, T Abio Open abstract OPEN ACCESS Semiparametric of truncated and four A W Wening, I N E Open abstract OPEN ACCESS On the modeling written test using 	din, E Sutanta, A Hamz view article regression curve esti- urier series estimator Budiantara and I Zain View article of the new student a g bernoulli mixture r	zah and O Somantri PDF	0
 D Apriliani, T Abio Open abstract OPEN ACCESS Semiparametric of truncated and four A W Wening, I N F Open abstract OPEN ACCESS On the modeling written test using D P Shiela Novelia 	din, E Sutanta, A Hamz view article regression curve esti- urier series estimator Budiantara and I Zain View article of the new student a bernoulli mixture r , Ismaini Zain, Nur Iria	eah and O Somantri PDF imation for longitudinal data using mixed spline r PDF acceptance status through science and technology nodel awan and W Suryaningtyas	0
 D Apriliani, T Abia Open abstract OPEN ACCESS Semiparametric retruncated and four A W Wening, I N E Open abstract OPEN ACCESS On the modeling written test using D P Shiela Novelia Open abstract 	din, E Sutanta, A Hamz View article regression curve esti- arier series estimator Budiantara and I Zain View article of the new student a g bernoulli mixture r , Ismaini Zain, Nur Iria View article	eah and O Somantri PDF imation for longitudinal data using mixed spline T PDF acceptance status through science and technology nodel awan and W Suryaningtyas PDF	0
D Apriliani, T Abio + Open abstract OPEN ACCESS Semiparametric for truncated and four A W Wening, I N E + Open abstract OPEN ACCESS On the modeling written test using D P Shiela Novelia + Open abstract OPEN ACCESS	din, E Sutanta, A Hamz View article regression curve esti- arier series estimator Budiantara and I Zain View article of the new student a g bernoulli mixture r , Ismaini Zain, Nur Iria View article	eah and O Somantri PDF imation for longitudinal data using mixed spline r PDF acceptance status through science and technology nodel awan and W Suryaningtyas PDF	0
 D Apriliani, T Abio Open abstract OPEN ACCESS Semiparametric of truncated and fou A W Wening, I N E Open abstract OPEN ACCESS On the modeling written test using D P Shiela Novelia OPEN ACCESS Analysis of factor 	din, E Sutanta, A Hamz View article regression curve esti- urier series estimator Budiantara and I Zain View article of the new student a g bernoulli mixture r , Ismaini Zain, Nur Iria View article ors affecting competi-	zah and O Somantri PDF imation for longitudinal data using mixed spline r PDF acceptance status through science and technology nodel awan and W Suryaningtyas PDF ition in bottled drinking water sales in Madura	0
 D Apriliani, T Abio Open abstract OPEN ACCESS Semiparametric of truncated and four A W Wening, I N E Open abstract OPEN ACCESS On the modeling written test using D P Shiela Novelia OPEN ACCESS Analysis of factor T Yulianto, Fatmav 	 din, E Sutanta, A Hamz View article regression curve estinator Budiantara and I Zain View article of the new student and bernoulli mixture regression, Nur Iria View article view article ors affecting competitivati, Windarto, M Rohr 	zah and O Somantri ♥DF imation for longitudinal data using mixed spline r The PDF acceptance status through science and technology nodel awan and W Suryaningtyas The PDF ition in bottled drinking water sales in Madura naniyah, Faisol and M F F Mardianto	0
 D Apriliani, T Abio Open abstract OPEN ACCESS Semiparametric for truncated and four A W Wening, I N E Open abstract OPEN ACCESS On the modeling written test using D P Shiela Novelia OPEN ACCESS Analysis of factor T Yulianto, Fatmaw Open abstract 	 din, E Sutanta, A Hamz View article regression curve estidutier series estimator Budiantara and I Zain View article of the new student and the new stude	zah and O Somantri ▶ PDF	0

OIEN ACCESS	Digital Repr	sitory Universitas, Jember	0
Forecasting compusing fuzzy suge	petition for sales of l no method	local and national bottled drinking water in madura	0
T Yulianto, Fatmav	vati, Windarto, A Halim	n, Faisol, Suprianto and A K Dharmawan	
+ Open abstract	View article	PDF	
Education			
OPEN ACCESS			0
The development of mathematical	t of student workshe literacy in junior hig	ets: questions of PISA model to analyze the ability gh school	
Sutama, S Narimo,	S Anif, H J Prayitno, D	DP Sari and M Adnan	
+ Open abstract	View article	PDF	
OPEN ACCESS The sustainabilit devices based on	y concept of Riau cu Riau folklore at eler	Iltures through development of mathematics learning mentary schools	0
S Rezeki, D Andria	ın, A Wahyuni and H N	lurkholisah	
+ Open abstract	View article	PDF	
The effect of emo mathematics lear Azainil, K R Amali	otional intelligence, i ning outcomes of sta ia, Sugeng, A Dimpudu	learning discipline and peer interaction on ate junior high school students in Samarinda is and Ramadiani	
+ Open abstract			
- open acoulor	Uiew article	PDF	
OPEN ACCESS Mathematics creaters	ativity skill of studer	The PDF	03
OPEN ACCESS Mathematics crea style F Isyrofinnisak, T 4	ativity skill of studer	The PDF nt in junior high school based on students thinking riana	03
 OPEN ACCESS Mathematics cress style F Isyrofinnisak, T A + Open abstract 	E View article ativity skill of studer A Kusmayadi and L Fit: E View article	PDF nt in junior high school based on students thinking riana PDF	01
 OPEN ACCESS Mathematics creating Style F Isyrofinnisak, T A + Open abstract OPEN ACCESS Scaffolding profit 	E View article ativity skill of studer A Kusmayadi and L Fita E View article .le in solving geomet	 PDF nt in junior high school based on students thinking riana PDF try problems in terms of van Hiele level 	07
 OPEN ACCESS Mathematics cress style F Isyrofinnisak, T 4 + Open abstract OPEN ACCESS Scaffolding profit H S Rahman, Susar 	The in solving geomet to, Hobri, M Irfan, R F	 PDF nt in junior high school based on students thinking riana PDF try problems in terms of van Hiele level Karimah' and A U Albab 	0.
 OPEN ACCESS Mathematics cress style F Isyrofinnisak, T 4 + Open abstract OPEN ACCESS Scaffolding profit H S Rahman, Susar + Open abstract 	 View article ativity skill of studer A Kusmayadi and L Fit View article ile in solving geometration to, Hobri, M Irfan, R k View article 	 PDF nt in junior high school based on students thinking riana ▶ PDF try problems in terms of van Hiele level Karimah' and A U Albab ▶ PDF 	01
 OPEN ACCESS Mathematics creasing Style F Isyrofinnisak, T 4 Open abstract OPEN ACCESS Scaffolding profit H S Rahman, Susar OPEN ACCESS Student's problem Community (LC) 	 View article ativity skill of studer A Kusmayadi and L Fit View article ile in solving geometer nto, Hobri, M Irfan, R k View article Niew article n solving abilities in) 	 PDF nt in junior high school based on students thinking riana PDF try problems in terms of van Hiele level Karimah' and A U Albab PDF PDF Project Based Learning (PjBL) based on Learning 	01

	lynai kep	USILUTY UTIVETSILAS JETTIVET	01
Profile of students	s' creative and inno	ovative thinking in solving open-ended mathematics	
problems about th	ne coffee plantation	1	
A U Albab and Y W	angguway		
+ Open abstract	View article	🄁 PDF	
OPEN ACCESS			01
The analyze of stu	udents' creative thin	nking skills on Lesson Study for Learning	
Community (LSL	C) based on Science	ce, Technology, Engineering, and Mathematics (STEM)	
approach			
D Yuniar, Hobri, A	C Prihandoko, K Aini	i and A K A Faozi	
	Tiew article	🔁 PDF	
OPEN ACCESS		IEPa.	01
The influence of r	mathematics acade	mic potential and learning motivation of Papuan	
college students in	n Jember on acader	mic achievement	
Y Wangguway and	A U Albab		
+ Open abstract	View article	🔁 PDF	
ODEN ACCESS			<u>.</u>
OPEN ACCESS			0
Student's higher-c	order thinking skills	s on creative problem solving based on caring	0.
Student's higher-c community	order thinking skills	s on creative problem solving based on caring	01
Student's higher-o community C F Lestari, Hobri, N	order thinking skills M Fatekurohman, D L	s on creative problem solving based on caring Lutvita and F Y W Ningrum	01
Student's higher-o community C F Lestari, Hobri, N + Open abstract	order thinking skills M Fatekurohman, D L	s on creative problem solving based on caring Lutvita and F Y W Ningrum	01
Student's higher-o community C F Lestari, Hobri, N + Open abstract	order thinking skills M Fatekurohman, D L I View article	s on creative problem solving based on caring Lutvita and F Y W Ningrum	01
Student's higher-oc community C F Lestari, Hobri, M + Open abstract	order thinking skills M Fatekurohman, D L T View article	s on creative problem solving based on caring Lutvita and F Y W Ningrum PDF	01
Student's higher-oc community C F Lestari, Hobri, M + Open abstract OPEN ACCESS The students' mat	order thinking skills M Fatekurohman, D L View article hematical commun	s on creative problem solving based on caring Lutvita and F Y W Ningrum PDF	01
Student's higher-oc community C F Lestari, Hobri, N + Open abstract OPEN ACCESS The students' mathematic cycle 5E	order thinking skills M Fatekurohman, D L Twiew article hematical commun	s on creative problem solving based on caring Lutvita and F Y W Ningrum PDF	01
 Student's higher-occommunity C F Lestari, Hobri, N Open abstract OPEN ACCESS The students' mathematic cycle 5E K Aini, Hobri, A C I 	order thinking skills M Fatekurohman, D L View article hematical commun Prihandoko, D Yuniar	s on creative problem solving based on caring Lutvita and F Y W Ningrum PDF	01
Student's higher-oc community C F Lestari, Hobri, M + Open abstract OPEN ACCESS The students' math cycle 5E K Aini, Hobri, A C I	order thinking skills M Fatekurohman, D L view article hematical commun Prihandoko, D Yuniar	s on creative problem solving based on caring Lutvita and F Y W Ningrum PDF nication skill on caring community-based learning r, A K A Faozi and Asmoni	01
Student's higher-oc community C F Lestari, Hobri, M + Open abstract OPEN ACCESS The students' math cycle 5E K Aini, Hobri, A C I + Open abstract	order thinking skills M Fatekurohman, D L Twiew article hematical commun Prihandoko, D Yuniar Twiew article	s on creative problem solving based on caring Lutvita and F Y W Ningrum PDF nication skill on caring community-based learning r, A K A Faozi and Asmoni PDF	01
Student's higher-oc community C F Lestari, Hobri, N + Open abstract OPEN ACCESS The students' math cycle 5E K Aini, Hobri, A C I + Open abstract	order thinking skills M Fatekurohman, D L Twiew article hematical commun Prihandoko, D Yuniar Twiew article	s on creative problem solving based on caring Lutvita and F Y W Ningrum PDF nication skill on caring community-based learning r, A K A Faozi and Asmoni PDF	01
Student's higher-oc community C F Lestari, Hobri, M + Open abstract OPEN ACCESS The students' matt cycle 5E K Aini, Hobri, A C I + Open abstract OPEN ACCESS Student's higher of	order thinking skills M Fatekurohman, D L view article hematical commun Prihandoko, D Yuniar View article weder thinking skills	s on creative problem solving based on caring Lutvita and F Y W Ningrum PDF Addition skill on caring community-based learning r, A K A Faozi and Asmoni PDF s on problem solving based on jumping tasks	01
Student's higher-oc community C F Lestari, Hobri, M + Open abstract OPEN ACCESS The students' math cycle 5E K Aini, Hobri, A C I + Open abstract OPEN ACCESS Student's higher of	order thinking skills M Fatekurohman, D L	s on creative problem solving based on caring Lutvita and F Y W Ningrum PDF inication skill on caring community-based learning r, A K A Faozi and Asmoni PDF s on problem solving based on jumping tasks	01
Student's higher-oc community C F Lestari, Hobri, N + Open abstract OPEN ACCESS The students' math cycle 5E K Aini, Hobri, A C I + Open abstract OPEN ACCESS Student's higher of D Lutvita, Hobri, D	order thinking skills M Fatekurohman, D L view article hematical commun Prihandoko, D Yuniar View article order thinking skills S Pambudi, C F Lesta	s on creative problem solving based on caring Lutvita and F Y W Ningrum PDF dication skill on caring community-based learning r, A K A Faozi and Asmoni PDF s on problem solving based on jumping tasks ari and F Y Wahyuningrum	01
Student's higher-oc community C F Lestari, Hobri, N + Open abstract OPEN ACCESS The students' mather cycle 5E K Aini, Hobri, A C I + Open abstract OPEN ACCESS Student's higher of D Lutvita, Hobri, D + Open abstract	order thinking skills M Fatekurohman, D L view article hematical commun Prihandoko, D Yuniar View article order thinking skills S Pambudi, C F Lesta View article	s on creative problem solving based on caring Lutvita and F Y W Ningrum PDF Action skill on caring community-based learning r, A K A Faozi and Asmoni PDF s on problem solving based on jumping tasks ari and F Y Wahyuningrum PDF	01
Student's higher-oc community C F Lestari, Hobri, M + Open abstract OPEN ACCESS The students' matt cycle 5E K Aini, Hobri, A C I + Open abstract OPEN ACCESS Student's higher o D Lutvita, Hobri, D + Open abstract	order thinking skills M Fatekurohman, D L view article hematical commun Prihandoko, D Yuniar View article order thinking skills S Pambudi, C F Lesta View article	s on creative problem solving based on caring Lutvita and F Y W Ningrum PDF incation skill on caring community-based learning r, A K A Faozi and Asmoni PDF s on problem solving based on jumping tasks ari and F Y Wahyuningrum PDF	01
Student's higher-oc community C F Lestari, Hobri, M + Open abstract OPEN ACCESS The students' math cycle 5E K Aini, Hobri, A C I + Open abstract OPEN ACCESS Student's higher of D Lutvita, Hobri, D + Open abstract OPEN ACCESS	order thinking skills M Fatekurohman, D L view article hematical commun Prihandoko, D Yuniar View article order thinking skills S Pambudi, C F Lesta View article	s on creative problem solving based on caring Lutvita and F Y W Ningrum PDF dication skill on caring community-based learning r, A K A Faozi and Asmoni PDF s on problem solving based on jumping tasks ari and F Y Wahyuningrum PDF	01
Student's higher-oc community C F Lestari, Hobri, N + Open abstract OPEN ACCESS The students' mather cycle 5E K Aini, Hobri, A C I + Open abstract OPEN ACCESS Student's higher of D Lutvita, Hobri, D + Open abstract OPEN ACCESS Student's metacog	order thinking skills M Fatekurohman, D L view article hematical commun Prihandoko, D Yuniar View article order thinking skills S Pambudi, C F Lesta View article gnitive ability in so	s on creative problem solving based on caring Lutvita and F Y W Ningrum PDF dication skill on caring community-based learning r, A K A Faozi and Asmoni PDF s on problem solving based on jumping tasks ari and F Y Wahyuningrum PDF lving quadrilateral problem based on adversity	01
Student's higher-oc community C F Lestari, Hobri, M + Open abstract OPEN ACCESS The students' mat cycle 5E K Aini, Hobri, A C I + Open abstract OPEN ACCESS Student's higher o D Lutvita, Hobri, D + Open abstract OPEN ACCESS Students' metacog quotient	order thinking skills M Fatekurohman, D L view article hematical commun Prihandoko, D Yuniar View article order thinking skills S Pambudi, C F Lesta View article gnitive ability in so	s on creative problem solving based on caring Lutvita and F Y W Ningrum PDF dication skill on caring community-based learning r, A K A Faozi and Asmoni PDF s on problem solving based on jumping tasks ari and F Y Wahyuningrum PDF lving quadrilateral problem based on adversity	01
Student's higher-oc community C F Lestari, Hobri, M + Open abstract OPEN ACCESS The students' maticycle 5E K Aini, Hobri, A C I + Open abstract OPEN ACCESS Student's higher of D Lutvita, Hobri, D + Open abstract OPEN ACCESS Student's migher of D Lutvita, Hobri, D + Open abstract	order thinking skills M Fatekurohman, D L View article hematical commun Prihandoko, D Yuniar View article order thinking skills S Pambudi, C F Lesta View article gnitive ability in so rdi, N Yuliati, R Karin	s on creative problem solving based on caring Lutvita and F Y W Ningrum PDF itication skill on caring community-based learning r, A K A Faozi and Asmoni PDF s on problem solving based on jumping tasks ari and F Y Wahyuningrum PDF lving quadrilateral problem based on adversity nah and A U Albab	01
Student's higher-oc community C F Lestari, Hobri, N + Open abstract OPEN ACCESS The students' mather cycle 5E K Aini, Hobri, A C I + Open abstract OPEN ACCESS Student's higher of D Lutvita, Hobri, D + Open abstract OPEN ACCESS Students' metacog quotient R Damayanti, Sunar + Open abstract	order thinking skills M Fatekurohman, D L view article hematical commun Prihandoko, D Yuniar View article order thinking skills S Pambudi, C F Lesta View article gnitive ability in so rdi, N Yuliati, R Karim View article	s on creative problem solving based on caring Lutvita and F Y W Ningrum	01

1, 8:29 PM	Jourr	nal of Physics: Conference Series, Volume 1538, 2020 - IOPscience			
OPEN ACCESS DIGITAL Repository Universitas Jember					
The students' mat	hematical reasoning	g ability based on problem based learning model			
M P Sari, Susanto, M	N Yuliati, E N Imamał	and N I Laily			
	View article	🔁 PDF			
OPEN ACCESS The effect of problem based learning model on junior high school students' higher order thinking skills					
E N Imamah, Sunar	di, E Yudianto, M P S	ari and N I Laily			
	Tiew article	PDF			
OPEN ACCESS The profile of stu geometry problem	dents conceptual ur ns based on van hie	nderstanding and procedural knowledge in solving le levels	0		
N I Laily, Sunardi, M	N Yuliati, E N Imamał	and M P Sari			
	View article	🔁 PDF			
OPEN ACCESS			0		
Scientific approac	Scientific approach learning implementation based on lesson study for learning community in solving sequence and series and its effect to student creative thinking ability				
E Guswanto, Susant	to, Hobri, P A Inawati	and A R Sya'Roni			
	View article	PDF			
OPEN ACCESS Students' mathem gender in junior h	natical communicati nigh school	on skills of the straight line equation based on	01		
H Aliyah, T A Kusr	nayadi and L Fitriana				
	View article	PDF			
OPEN ACCESS Analysis of stude	nts' verbal and writ	ten mathematical communication error in solving	01		
M A Maulyda A M	Annizar V R Hidava	ti and M Mukhlis			
Open abstract	View article				
• Open abstract					
OPEN ACCESS Student's mathem collaborative lear	natical creative skill ning	using interactive application media based on	01		
P A Inawati, Hobri,	D S Pambudi, E Gusv	vanto and A R Sya'roni			
+ Open abstract	Tiew article	PDF			
This site uses cookid OPEN ACCESS see our Privacy and	es. By continuing to us	se this site you agree to our use of cookies. To find out more,	01		

1, - 1	8:29 PM Journal of Physics: Conference Series, Volume 1538, 2020 - IOPscience Analysis of higher order thinking skills of SMP students in completing the problem of the numbers through the application of problem based learning					
]	Imelda and D Anzelina					
•		View article	PDF			
	OPEN ACCESS			01		
]	Male students' vis	sual reasoning in so	olving mathematical problem			
]	Darmadi, Sanusi, E	Wihardjo, Karim, Sup	prianto and S Prayitno			
•	✤ Open abstract	Tiew article	🔁 PDF			
(OPEN ACCESS	second based loom	ing implementation and its offeat to the students!	01		
1	metacognition sk	ill in solving a resol	lving domination number of a graph			
,	Y Wangguway, Sla	min, Dafik, I N Maylis	sa and S Kurniawati			
	+ Open abstract	View article	🔁 PDF			
-	OPEN ACCESS			01		
, 1	The students' promathematics (ster	blem solving abiliti n) based on lesson	es in science, technology, engineering and study for learning community (lslc)	01		
]	F Y W Ningrum, H	obri, Susanto, Dafik, I	D Lutvita and C F Lestari			
•	+ Open abstract	View article	PDF			
	OPEN ACCESS			01		
	The analysis of painnovative skills	roblem-based learn in solving rainbow	ing implementation and its effect on students creative antimagic coloring based on cognitive style			
,	Z L Al Jabbar, Dafi	k, A F Hadi, Y Wangg	guway and B Sulistiyono			
•	+ Open abstract	View article	🔁 PDF			
	OPEN ACCESS			01		
,	The influence of a combinatorial this	research-based lear nking skills in solvi	ning implementation in improving students' ing local irregularity vertex r-dynamic coloring	01		
]	I N Maylisa, Dafik,	A F Hadi, Y Wanggu	way and L O Harjito			
		View article	🔁 PDF			
	OPEN ACCESS					
, 1	The analysis of output based learning implementation in improving students creative and innovative thinking skills in solving <i>H</i> -Irregularity					
]	D M O Suni, Dafik,	I M Tirta, Y Wanggu	way and M H Mukaromah			
		Tiew article	🔁 PDF			
-	OPEN ACCESS	es. By continuing to u	se this site you agree to our use of cookies. To find out more	01		

	View article	▶ PDF	
OPEN ACCESS			0
The analysis of the	he implementation i	inquiry based learning to improve student	
mathematical pro	oving skills in solvii	ng dominating metric dimention number	
A N Hayyu, Dafik,	I M Tirta, Y Wangguv	vay and S Kurniawati	
	View article	🔁 PDF	
OPEN ACCESS			0
Improving creati multimedia in gra	ve problem solving aph theory course	performance of mathematics students by digital	
S Wahyuningsih, D	Satyananda and A Qo	phar	
	View article	PDF	
OPEN ACCESS			0
The analysis of the student deductive labelling	he implementation of e reasoning based of	of project based learning and its influence to the n cognitive style on solving super edge local antimagic	tota
M Karimah, Dafik,	I M Tirta, Y Wangguv	way and Z L A Jabbar	
+ Open abstract	View article	🔁 PDF	
OPEN ACCESS			0
Students' creative research based le	e-innovative thinkin earning model	ng skill in solving rainbow antimagic coloring under	
B Sulistiyono, Slan	nin, Dafik, Y Wangguv	way and Z L Al Jabbar	
	View article	🔁 PDF	
OPEN ACCESS			0
The analysis of the conjecturing skill	he discovery learnir ls in solving a resol	ng implementation and its affect to the students ving domination number	
S Kurniawati, Slam	nin, Dafik, Y Wangguv	vay and A N Hayyu	
	View article	🔁 PDF	
OPEN ACCESS			0
The shadow reck Trigonometry	coning problem from	n ancient society as context for learning	÷
A D Fachrudin, R H	Ekawati, A W Kohar, S	S Widadah, I B Kusumawati and R Setianingsih	
	View article	🔁 PDF	

♣ Open abstract	ana and i Stamer of	ository Universitas Jember			
• Open abstract	View article	PDF			
OPEN ACCESS					
The analysis of a mind	lgebra creative thinl	king skill based on strong mathematical habit of			
S W P Nugroho, Ri	yadi and Triyanto				
	View article	PDF			
OPEN ACCESS Students' mathem	natical reasoning ab	ility viewed from self-efficacy	0		
D I Jumiarsih, T A	Kusmayadi and L Fitri	iana			
+ Open abstract	View article	PDF			
OPEN ACCESS Students' mathen from learning sty	natical communicati vles	on abilities in solving geometry problems viewed	0		
A N Sholihah, Riya	adi and Triyanto				
+ Open abstract	View article	PDF			
OPEN ACCESS The written math set problems	ematical communic	ation ability of junior high school students in solving	0		
N Azizah, B Usodo	and D R S Saputro				
N Azizah, B Usodo + Open abstract	and D R S Saputro	PDF			
 N Azizah, B Usodo + Open abstract OPEN ACCESS Investigation of t 	and D R S Saputro	PDF	0		
 N Azizah, B Usodo + Open abstract OPEN ACCESS Investigation of t S A Marga, T A Ku 	and D R S Saputro Tiew article The students' number Ismayadi and L Fitrian	PDF • sense in seventh grade a	0		
 N Azizah, B Usodo + Open abstract OPEN ACCESS Investigation of t S A Marga, T A Ku + Open abstract 	and D R S Saputro View article the students' number usmayadi and L Fitrians View article	PDF sense in seventh grade a PDF	0.		
 N Azizah, B Usodo + Open abstract OPEN ACCESS Investigation of t S A Marga, T A Ku + Open abstract OPEN ACCESS Analyzing studer style 	and D R S Saputro Tien View article The students' number Ismayadi and L Fitrians Tien View article Tis' representation al	PDF e sense in seventh grade a PDF polity: viewed from reflective-impulsive cognitive	0		
 N Azizah, B Usodo + Open abstract OPEN ACCESS Investigation of t S A Marga, T A Ku + Open abstract OPEN ACCESS Analyzing studer style D Septiani, Riyadi abstract 	and D R S Saputro Tien View article The students' number Ismayadi and L Fitrians Tien View article Tis' representation ale and Triyanto	PDF sense in seventh grade a PDF polity: viewed from reflective-impulsive cognitive	0		
 N Azizah, B Usodo + Open abstract OPEN ACCESS Investigation of t S A Marga, T A Ku + Open abstract OPEN ACCESS Analyzing studer style D Septiani, Riyadi a + Open abstract 	 and D R S Saputro View article the students' number usmayadi and L Fitriana View article tts' representation al and Triyanto View article 	PDF sense in seventh grade a ★ PDF bility: viewed from reflective-impulsive cognitive	0.000		
 N Azizah, B Usodo + Open abstract OPEN ACCESS Investigation of t S A Marga, T A Ku + Open abstract OPEN ACCESS Analyzing studer style D Septiani, Riyadi a + Open abstract OPEN ACCESS Mathematical commathematical res 	 and D R S Saputro View article the students' number usmayadi and L Fitrian View article ts' representation all and Triyanto View article nnections ability of julience 	 PDF sense in seventh grade a PDF bility: viewed from reflective-impulsive cognitive PDF junior high school students viewed from 	0		

,	Digital Ren	ository Illniversitas, lember			
OPEN ACCESS	Eightaintop		01		
The SOLO taxonomy: classify students' responses in solving linear program problems					
L E Claudia T A	Kusmavadi and L Fitriz				
	View article	PDF			
OPEN ACCESS PCK (<i>Pedagos</i> Universitas PC	gical Content Knowled GRI Yogyakarta	<i>dge</i>) profile of mathematics education students at	012		
B Wicaksono and	d N M S Dwipa				
	View article	PDF			
OPEN ACCESS Students' meta on jumping tas	cognitive ability in co k	ontextual teaching and learningof mathematics based	012		
M Khoirudin, Ho	obri, M Irfan, E Guswant	to and D Purwandi			
+ Open abstract	Tiew article	🔁 PDF			
OPEN ACCESS The developm (HOTS) on con	ent of mathematical p mparative material by	roblem based on Higher Order Thinking Skill implementing PBL and its effect on the teacher's creat	01 ive		
OPEN ACCESS The developme (HOTS) on conthinking skill A Widiatsih, D A + Open abstract	ent of mathematical p mparative material by A R Wardani, U Royhana T View article	problem based on Higher Order Thinking Skill wimplementing PBL and its effect on the teacher's creat a, F Djamali and B J Septory PDF	01 ive		
OPEN ACCESS The developm (HOTS) on cor thinking skill A Widiatsih, D A + Open abstract	ent of mathematical p mparative material by A R Wardani, U Royhana Toiew article	problem based on Higher Order Thinking Skill wimplementing PBL and its effect on the teacher's creat a, F Djamali and B J Septory PDF	01. ive		
OPEN ACCESS The developm (HOTS) on conthinking skill A Widiatsih, D A + Open abstract	ent of mathematical p mparative material by A R Wardani, U Royhana Toewarticle	problem based on Higher Order Thinking Skill v implementing PBL and its effect on the teacher's creat a, F Djamali and B J Septory PDF	01 ive 01		
 OPEN ACCESS The development (HOTS) on contributing skill A Widiatsih, D A + Open abstract OPEN ACCESS The effect of comotivation and 	ent of mathematical p mparative material by A R Wardani, U Royhana Twiew article omic-based realistic r l conceptual understar	Problem based on Higher Order Thinking Skill wimplementing PBL and its effect on the teacher's creat a, F Djamali and B J Septory PDF mathematics approach on students' learning nding	01. ive 01		
OPEN ACCESS The developm (HOTS) on conthinking skill A Widiatsih, D A + Open abstract OPEN ACCESS The effect of comotivation and T N Sipayung, S	ent of mathematical p mparative material by A R Wardani, U Royhana Twiew article omic-based realistic r l conceptual understan D Simanjuntak, A Wija	problem based on Higher Order Thinking Skill y implementing PBL and its effect on the teacher's creat a, F Djamali and B J Septory PDF mathematics approach on students' learning nding ya and S Sugiman	01. ive 01		
 OPEN ACCESS The developmed (HOTS) on contribution on contrib	ent of mathematical p mparative material by A R Wardani, U Royhana To View article omic-based realistic r l conceptual understan D Simanjuntak, A Wijay	roblem based on Higher Order Thinking Skill y implementing PBL and its effect on the teacher's creat a, F Djamali and B J Septory PDF mathematics approach on students' learning nding ya and S Sugiman PDF	01. ive 01		
OPEN ACCESS The developm (HOTS) on cont thinking skill A Widiatsih, D A + Open abstract OPEN ACCESS The effect of c motivation and T N Sipayung, S + Open abstract OPEN ACCESS The effect of Is outcomes of cl	ent of mathematical p mparative material by A R Wardani, U Royhana Townic-based realistic r l conceptual understan D Simanjuntak, A Wijay Twiew article slamic interactive mea ass 7 in one-variable	oroblem based on Higher Order Thinking Skill y implementing PBL and its effect on the teacher's creat A, F Djamali and B J Septory PDF mathematics approach on students' learning nding ya and S Sugiman PDF dia by using adobe flash CS6 on students' learning linear equation material	01. ive 01		
OPEN ACCESS The developm (HOTS) on cor thinking skill A Widiatsih, D A + Open abstract OPEN ACCESS The effect of c motivation and T N Sipayung, S + Open abstract OPEN ACCESS The effect of Is outcomes of cl U Farihah and S	ent of mathematical p mparative material by A R Wardani, U Royhana To View article omic-based realistic r l conceptual understan D Simanjuntak, A Wijay To View article slamic interactive mea ass 7 in one-variable N Fadilah	roblem based on Higher Order Thinking Skill y implementing PBL and its effect on the teacher's creat A, F Djamali and B J Septory PDF mathematics approach on students' learning nding ya and S Sugiman PDF dia by using adobe flash CS6 on students' learning linear equation material	01. ive 01		
OPEN ACCESS The developm (HOTS) on con- thinking skill A Widiatsih, D A + Open abstract OPEN ACCESS The effect of c motivation and T N Sipayung, S + Open abstract OPEN ACCESS The effect of Is outcomes of cl U Farihah and S + Open abstract	ent of mathematical p mparative material by A R Wardani, U Royhana To View article omic-based realistic r l conceptual understan D Simanjuntak, A Wijay To View article slamic interactive men ass 7 in one-variable N Fadilah	roblem based on Higher Order Thinking Skill implementing PBL and its effect on the teacher's creat A, F Djamali and B J Septory PDF mathematics approach on students' learning nding ya and S Sugiman PDF dia by using adobe flash CS6 on students' learning linear equation material PDF	01. ive 01		
OPEN ACCESS The developm (HOTS) on conthinking skill A Widiatsih, D A + Open abstract OPEN ACCESS The effect of c motivation and T N Sipayung, S + Open abstract OPEN ACCESS The effect of Is outcomes of cl U Farihah and S + Open abstract	ent of mathematical p mparative material by A R Wardani, U Royhana To Niew article omic-based realistic r l conceptual understan D Simanjuntak, A Wijay To View article slamic interactive met ass 7 in one-variable N Fadilah To View article	roblem based on Higher Order Thinking Skill y implementing PBL and its effect on the teacher's creat a, F Djamali and B J Septory PDF mathematics approach on students' learning nding ya and S Sugiman	01 ive 01 01		
OPEN ACCESS The developm (HOTS) on cont thinking skill A Widiatsih, D A + Open abstract OPEN ACCESS The effect of c motivation and T N Sipayung, S + Open abstract OPEN ACCESS The effect of Is outcomes of cl U Farihah and S + Open abstract OPEN ACCESS The implement metacognition	ent of mathematical p mparative material by A R Wardani, U Royhana Twiew article Omic-based realistic r I conceptual understan D Simanjuntak, A Wijay Twiew article Slamic interactive meta ass 7 in one-variable N Fadilah Tradilah Twiew article	oroblem based on Higher Order Thinking Skill y implementing PBL and its effect on the teacher's creat A, F Djamali and B J Septory PDF mathematics approach on students' learning nding ya and S Sugiman PDF dia by using adobe flash CS6 on students' learning linear equation material PDF ed learning and the effect to the student ving <i>H</i> -irregularity problem	01. ive 01 01. 01.		
 OPEN ACCESS The development (HOTS) on constraints A Widiatsih, D A OPEN ACCESS The effect of constraints TN Sipayung, S OPEN ACCESS The effect of Isourcomes of class U Farihah and S OPEN ACCESS The implement metacognition M Hidayatul, Data 	ent of mathematical p mparative material by A R Wardani, U Royhana To View article omic-based realistic r conceptual understan D Simanjuntak, A Wijay To View article slamic interactive mea ass 7 in one-variable N Fadilah To View article N Fadilah To View article tation of research bas thinking skills in solv fik, I M Tirta, Y Wangge	problem based on Higher Order Thinking Skill y implementing PBL and its effect on the teacher's creat a, F Djamali and B J Septory ▷ PDF mathematics approach on students' learning nding ya and S Sugiman ▷ PDF dia by using adobe flash CS6 on students' learning linear equation material ▷ PDF ed learning and the effect to the student ving <i>H</i> -irregularity problem uway and D M O Suni	01: ive 01: 01: 01:		

9/21,	1, 8:29 PM Journal of Physics: Conference Series, Volume 1538, 2020 - IOPscience OPEN ACCESS Digital Repository Universitas Jember Development of <i>Remedial</i> mathematics learning based on <i>Lesson Study for Learning</i>						
	Community against problem solving						
	D Purwandi, Susanto and Hobri						
	+ Open abstract	Tiew article	PDF				
	Combinatorics						
	OPEN ACCESS			0121			
	Scheduling algor	ithms for an expatria	ate assignment using vertex coloring of graph				
	N O Adiwijaya and	Slamin					
		Tiew article	PDF				
	JOURNAL LINKS						
	Journal home						
	Journal Scope						
	Information for orga	anizers					
	Information for aut	nors					
	Contact us						
	Reprint services fro	m Curran Associates	The Electrochemical Society Advancing solid state & electrochemical science & technology 2021 Virtual Education Intensive Short Courses Sunday, October 10 & Monday, October 11				

8

PAPER • OPEN ACCESS

The effect of lerak foam and kapok as a silencer on lightweight concrete

To cite this article: Dwi Nurtanto et al 2020 J. Phys.: Conf. Ser. 1538 012041

View the article online for updates and enhancements.



This content was downloaded from IP address 101.128.81.21 on 19/09/2021 at 14:25

ICCGANT 2019

Journal of Physics: Conference Series

1538 (2020) 012041 doi:10.1088/1742-6596/1538/1/012041

IOP Publishing

The effect of lerak foam and kapok as a silencer on lightweight concrete

Dwi Nurtanto¹, Hernu Suyoso¹, Ahmad Hasanuddin¹, Zahra Hikmah Hayati¹ and Mukhlisin¹

¹Civil Engineering Department, Faculty of Engineering, University of Jember, Indonesia

Email: dwinurtanto999@gmail.com, hernu.suyoso@gmail.com, damha_sipilunej@yahoo.co.id, zahrahikhay98@gmail.com, muklisin987@gmail.com

Abstract. Lerak Foam is Foam produced by Lerak fruit mixed with water. This Foam is very suitable as an air cavity enhancer in lightweight concrete. Kapok is a natural material commonly used as pillows, mattresses and stuffed toys. Kapok with fine fibers and easily formed in a concrete mixture is expected to reduce noise. The purpose of this study is to reduce the noise of concrete materials by adding Lerak Foam and Kapok. This research was conducted in the Concrete Laboratory University of Jember, by making a sample of 40 cm x 40 cm x 40 cm concrete box with a thickness variation of 3 cm and 7 cm. This study intend to compare the value of noise reduction and transmission loss from the concrete specimen model with the addition of 100cc Lerak Foam and Kapok with 0%, 1.5%, 2.5%, 3.5% and 5% from the weight of concrete. The different values can be found by giving a noise gauge inside from the concrete box. The level of noise reduction is affected by the thickness of concrete. The level of noise reduction will increase as much as the addition of Kapok Fibers in concrete mixtures.

1. Introduction

One result of the rapid development of infrastructure is noise. The sound from heavy equipment, dump trucks, hammers, has made noises. Loud sounds can impact human life psychologically and biologically. Loud sounds can impact human life psychologically and biologically. The noise can disrupt the hearing system, disrupt the respiratory system, and reduce the concentration. It is necessary to apply sound absorbing devices by using appropriate materials. The development of construction materials that can absorb sound has evolved, but the price of this material is still expensive and not friendly for our environment, such as Styro-Foam [6,13]. Sound absorbing material commonly used is high-density walls such as red bricks, which have a density of 2,000 kg/m3. Therefore, it is required to reduce weight by using lightweight materials, such as lightweight bricks or lightweight concrete [8]. Lightweight concrete has been used since ancient times and it becomes the most interesting part of this research because of the benefits are more economical than conventional concrete, such as lower transport costs, low hydration heat, good heat insulation material, superior in sound absorption, low production costs due to the use of a lightweight and inexpensive aggregates [4]. However, this type of concrete has several disadvantages



Content from this work may be used under the terms of the Creative Commons Attribution 3.0 licence. Any further distribution of this work must maintain attribution to the author(s) and the title of the work, journal citation and DOI. Published under licence by IOP Publishing Ltd

ICCGANT 2019		IOP Publishing
Journal of Physics: Conference Series	1538 (2020) 012041	doi:10.1088/1742-6596/1538/1/012041

including lower mechanical properties and durability, higher shrinkage and drying creep[7].

Generally, lightweight concrete research used natural material, such as pumice, diatomic, Skoria, volcanic ash, lightweight artificial aggregates such as tile flakes, slate, and ceramic [5,14,17]. Making a lightweight concrete also can be applied in porous concrete, for example, the porous concrete road. According to Nurtanto (2017), Malaysia, the Philippines, and Indonesia, precisely on the island of Java, are producers of cotton in Southeast Asia. The dried cottonwood fruit is a source of fiber source, used as a basis for mattresses, pillows, wall decorations, protective clothing, and stuffed fillings and heat insulation and soundproofing. Dry skin of kapok fruit can be used as a fuel. The seeds that contain oil are used as lubricants and lamp oil, thus can be used as energy raw materials. Lerak or also known as rerek or lamuran is a plant known for its useful uses as traditional detergent. Batik is usually recommended to be washed by Lerak because it is considered as the most suitable washing instrument to maintain the color quality of batik. Lerak seeds contain saponins, a toxic alkaloid, these saponins produce Foam and function as a washing instrument, and can be used as a cleaner for various kitchen appliances, floors, even bathing and cleaning [1]. Lerak fruit can produce large amounts of Foam expected in a lightweight concrete mixture that can make air cavities [11]. Kapok is the lightweight concrete mix is expected to be able to absorb sound. In this study, the addition of cotton fiber is assumed to increase the ability of lightweight concrete to reduce the noise with the same mechanical properties as conventional concrete. This research was conducted to compare the value of noise reduction and transmission loss from conventional lightweight concrete models with lightweight concrete with the addition of Lerak Foam and Kapok.

2. Experiment investigation

2.1 Material used

Lightweight concrete is planned to have a compressive strength characteristic of 20 MPa. The cement used is portland pozzolan cement (PPC) type 1 with a volume weight of 1.195 gr/cm3 and a specific gravity of 3.02 gr/cm³, using Jember local sand mining with volume weight of 1.57 gr/cm³ and a specific gravity of 2.73 gr/cm³. Pumice as coarse aggregate with a volume weight of 0.54 gr/cm³ and a specific gravity of 0.93 gr/cm³. The Lerak Foam used is 100 cc. Kapok was made in such a way to form a circle with a diameter of 1 cm with a weight of 0%, 1.5%, 2.5%, 3.5% and 5% of the weight of cement.



Figure 1. Lerak Foam (a) and Kapok (b)

2.2 Mix Proportions

To investigate the ability to absorb sound in lightweight concrete with the addition of Lerak Foam and cotton, conventional concrete is used as a control mixture. The proportion of the control concrete mixture is with a compressive strength of 20 MPa plan by using pumice as the rough aggregate (BN). The Lerak Foam used is 100 cc/m3 of concrete and uses 0% (B0), 1.5% (B1), 2.5% (B2), 3.5% (B3) and 5% (B4) kapok from the weight of cement. From the Table 1, shows the physical properties of

ICCGANT 2019

Journal of Physics: Conference Series

1538 (2020) 012041 doi:10.1088/1742-6596/1538/1/012041

IOP Publishing

fine aggregates and coarse aggregates. A mixture of proportions and all decreases in value concrete mix is presented in Table 2.

]	No	Test Variables	Fine aggregate (%)	Coarse Aggregate (%)
1	1	Absorption	1.59	1.49
2	2	Water Content	1.61	0.33
(1)	3	Density	2.67	2.54

Table 1. The results from the test materials

Mix	Cement	Water	W/C	Sand	Pumice	Lerak	Kapok
Code	(Kg)	(Kg)	W/C	(Kg)	(Kg)	Foam (cc)	(Kg)
BN	544	201	0,37	575	54,5	-	-
B0	544	201	0,37	575	54,5	100	-
B1	544	201	0,37	575	54,4	100	8,16
B2	544	201	0,37	575	54,5	100	13,6
B3	544	201	0,37	575	54,5	100	19,04
B4	544	201	0,37	575	54,5	100	27,2

Table 2. Details of the concrete mixes (per m	3).
---	---	----

2.3 Test Method

Concrete specimens were cast in a steel cylinder with a height of 300 mm and a diameter of 150 mm to determine the compressive strength. The size of hollow-shaped square specimens is 40 cm x 40 cm x 40 cm with the variation of concrete thickness between 3 cm and 7 cm to determine sound absorption. The concrete compressive strength test and density at 28 days that carried in this study based on SNI [15,16]. Sound suppression test with a sound meter based on ASTM [3]. At least, three test specimens were served to obtain an average compressive strength and sound absorption.

3. Test results and discussion

3.1. Density

Table 3 and Picture 2 present the relationship between the level of addition of Lerak Foam and Kapok with density. Test results prove that the addition of Lerak Foam and Kapok is decreased the concrete density Test results prove that the addition of Lerak Foam and Kapok is decreased the concrete density. This occurs because of the specific gravity from kapok is lower than sand and pumice. Concrete control density normal (BN mixture) 1881 kg/m³. In this range, concrete is considered as lightweight concrete [19]. The addition of 100cc Lerak Foam can reduce the concrete density of about 0.4%.

The addition of Lerak Foam and Kapok with 1.5% cement, 2.5%, 3.5% and 5% can reduce the density of about 1%, 1.9%, 3.4%, and 4.4%. All of the concretes that have dry density of less than 2000 kg/m³ can be considered as lightweight concrete [2]. In the same mixture, the thickness specimen with the smallest density is 3 cm. This is because the concrete constituent material has been partially replaced with Lerak Foam and cotton. The volume with 3 cm thick is smaller than the 7 cm thick, with the volume of Lerak Foam and kapok mixed, the volume of concrete (pasat, aggregate) composition is more often replaced at 3 cm volume. This causes the density of 3 cm thick concrete with the addition of Lerak Foam and kapok lighter.

ICCGANT 2019

Journal of Physics: Conference Series

1538 (2020) 012041 doi:10.1088/1742-6596/1538/1/012041

IOP Publishing

Mix Code	Average (K	e of Density (g/m3)
	3 cm	7 cm
BN	1.881	1.886
B0	1.872	1.877
B1	1.859	1.869
B2	1.843	1.851
B3	1.815	1.823
B4	1.789	1.810





Figure 2. Concrete Density with different thickness 3.2 Compressive Strength

The compressive strength of all concrete mixes at 28 days is shown in BN containing a rough aggregate of pumice without the addition of Lerak Foam and kapok that considered as a control concrete. Table 4 and Picture 3, shows the relationship between the level of addition of Lerak Foam and kapok with compressive strength. Concrete compressive strength, BN, shows the compressive strength of 28 days is 21.76 MPa. The compressive strength decreased due to the addition of Lerak Foam and Kapok. The mixture of B0, B1, B2, B3, and B4 showed 2.6%, 5.1%, 7.3%, 8.96%, and 10.4%, reveals the lower compressive strength compared to control mix (BN).

The decline of the concrete compressive strength is mostly caused by weak bonds between aggregates, kapok, and cement matrix. Also, cotton has a significantly lower density which also generates lower compressive strength than concrete. Lo et al stated that the strength of lightweight concrete is dependent on the strength of the aggregates that used, cement paste, and the bonding interface between aggregate and cement paste. The decline of the concrete compressive strength is also caused by an increase of W / C. W / C increases due to the addition of Lerak Foam where the

ICCGANT 2019

Journal of Physics: Conference Series

1538 (2020) 012041 doi:10.1088/1742-6596/1538/1/012041

IOP Publishing

basic ingredients are from the water. The addition of Lerak Foam with 100cc provides a decrease in compressive strength within 2.6%.

The previous study reveals that the decrease of concrete compressive strength is generally due to the bond damage between the cement glue and aggregate [9]. The weak bond between aggregate and cement mortar is mainly due to the addition of Lerak Foam and cottonwood. High strength lightweight concrete usually has compressive strength in the range of 34-69 MPa with dry air density less than 2000 kg /m³ [20].

Mix Code	Average Compressive Strength (MPa)		
BN	21.76		
B0	21.19		
B1	20.64		
B2	20.18		
B3	19.81		
B4	19.505		

Table 4. Results of concrete compressive strength test at 28 days



Figure 3. Concrete Compressive Strength

3.2. Sound Absorption

Because of the limitations of equipment, space and test objects, in this study, absolute values cannot be generated, but the differences sound levels at each frequency are represented by Noise Reduction (NR) and transmission loss (TL) on the decibels (dB) scale. Decibels (dB) are used to measure sound intensity or loudness. The stronger the sound, the higher dB level is increased. Decreasing the unwanted sound levels with one of several ways of acoustic treatments is known as a noise reduction. Transmission loss (TL) generally illustrates the accumulation of reduced energy intensity in the form of waves when the waves propagate out from a source or spread through certain areas or certain types of structures.

Sound transmission class (STC) is a numerical rating of the wall, floor/ceiling capability assembly or other building elements such as a door or window to minimize channel transmission. The higher the STC class, the more voice it has blocked or reduced by building elements[10].

ICCGANT 2019

Journal of Physics: Conference Series

1538 (2020) 012041 doi:10.1088/1742-6596/1538/1/012041

IOP Publishing

Sound Transmission Class (STC)	Speech Audibility *	Noise Control Rating	
15 to 25	Normal speech easily understood.	Poor	
25 to 35	Loud speech easily understood. Normal speech 50% understood.	Marginal	
35 to 45	Loud speech 50% understood. Normal speech is heard, but not understood	Good	
45 to 55	Loud speech faintly heard, but not understood. Normal speech is usually inaudible.	Very Good	
55 and up	Loud speech usually inaudible	Excellent	

Table 5. STC Ranting's

*Given a typical background noise level of 30 dB on the "listening" side

The measurements were executed by testing the model of the test object in a closed room in the Structure Laboratory, Jember University. In every test gap, the specimen is closed by plasticine to avoid the entry of sound from outside through the small gaps from the test object. The hollow specimen is 40x40x40 cm within 3 cm and 7 cm thickness. ASTM E 1050 90, the test object was given a sound source to measure the difference in sound inside and outside the test object model. The sound source is captured by 2 microphones, which are placed inside the test specimen and outside the test specimen is placed 10 cm from the sound source. While the microphone outside the test specimen is placed 60 cm from the test specimen, the sound level inside and outside the test specimen is measured in decibels (dB) using a sound meter.



Figure 4. Lay Out

ICCGANT 2019

Journal of Physics: Conference Series

IOP Publishing **1538** (2020) 012041 doi:10.1088/1742-6596/1538/1/012041

The amount of sound source used is 57 dB, 69 dB, and 80 dB. To calculate the amount of

transmission loss, use the following formula below: NR = SPL1 - SPL2

NR = SPL1 - SPIA = a.L

TL

= NR + 10 log S/A

Annotation:

NR = Noise Reduction (dB).

SPL1 = SPL sound sources (dB).

SPL2 = SPL sound receiver (dB).

TL = Transmission Loss (dB).

S = Partition field area (m^2) .

A = Absorption level from receiving room (m^2) .

a = Absorption coefficient of material in receiving room

L= Field area on receiving room (m^2) .

Table 6. Average noise reduction on specimens of 3 cm thickness

	Noise Reduction (dB) and Tranmission Loss (dB						
Mix	Sound Sources (dB)						
Code	57		6	69		80	
	NR	TL	NR	TL	NR	TL	
BN	12,33	23,39	12,67	23,55	12,75	23,72	
B0	13,67	24,64	13,67	24,64	13,75	24,72	
B1	15,58	26,55	15,33	26,30	15,33	26,30	
B2	17,92	28,89	17,92	28,89	17,50	28,47	
B3	19,67	30,64	19,83	30,80	19,58	30,55	
B4	21,58	32,55	21,75	32,72	21,42	32,39	

Table 7. Average noise reduction on specimens of 7 cm thickness

	Noise Reduction (dB) and Tranmission Loss (dB)					
Mix	Sound Sources (dB)					
Code	57		69		80	
	NR	TL	NR	TL	NR	TL
BN	14,83	25,80	14,92	25,89	14,50	25,80
B0	18,25	29,22	17,67	28,64	17,67	28,64
B1	19,50	30,47	19,58	30,55	19,42	30,39
B2	20,67	31,64	20,75	31,72	20,25	31,30
B3	21,25	32,22	21,75	32,72	21,67	32,64
B4	22,42	33,39	22,67	33,64	22,42	33,39

(1)

(2)

ICCGANT 2019

Journal of Physics: Conference Series

1538 (2020) 012041 doi:10.1088/1742-6596/1538/1/012041

IOP Publishing

Table 6 and Table 7 present the results of NR and also TL on three sound sources of 57 dB, 69 dB and 80 dB. The average values of NR and TL in three sources provide almost the same value in the same lightweight concrete mixture. For the lowest NR and TL values in conventional concrete mix is BN. For the highest NR and TL values in the concrete mixture is B4.

Picture 5 and Picture 6, shows the Noise Reduction value and Transmission Loss value in each concrete mixture. The mix code B0 increases the value of Noise Reduction with the addition of Lerak Foam only. The value of Transmission Loss of 8.85%, 4.72% in the thickness of the specimen 3 cm and 21.11%, 11.61% in the thickness of the specimen 7 cm, with the conventional concrete (BN) as a guideline. Increasing the Kapok's addition also makes the value of Noise Reduction and Transmission Loss increased. This is because of the increasing Kapok's addition to the mixture the value of concrete density decreases[8].







Figure 7. Average Noise Reduction







Figure 8. Average Transmission Loss

Picture 7 and Picture 8 show the effect of specimen thickness with a thickness of 7 cm have better noise reduction and transmission loss values than specimens with a thickness of 3 cm. According to NAIMA Building Insulation Committee (2010), in the B0 mix code, the addition of Lerak Foam has a

ICCGANT 2019

Journal of Physics: Conference Series

IOP Publishing

1538 (2020) 012041 doi:10.1088/1742-6596/1538/1/012041

significant difference in noise reduction and transmission loss within 4.17 DB. Even though the value of the density decreases, with the addition of cotton fiber the more differences in noise reduction and transmission loss decrease[10].

4. Conclusions

In this study, the lightweight concrete using pumice stone as coarse aggregate with the addition of Lerak Foam and Kapok to examine the possibility of producing soundproof lightweight concrete. The study analyzes the effectiveness of this substitution on density, mechanical properties, and noise reduction and transmission loss of concrete. Based on the test results, then the following conclusions can be drawn:

- a. The addition of 100ccs of Lerak Foam and kapok 1.5%, 2.5%, 3.5% and 5% by weight of cement can decrease the density of concrete.
- b. Concrete with Lerak Foam shows a lower compressive strength and keep decreases simultaneously with the addition of kapok.
- c. Contribution of 100 ccs of Lerak Foam and Kapok up to 5% significantly increases the value of noise reduction and transmission loss in the concrete mixture. This proves that Lerak Foam and Kapok can improve sound absorption performance on lightweight concrete.
- d. Insulation thickness has a more significant effect on noise reduction and transmission loss than density.

Acknowledgment

The authors would like to thank the Structure and Concrete Laboratory, University of Jember for facilitates this research.

References

- [1] Ardita, Ferdi. Natural Soap. edition 6. Percik Junior.
- [2] Aslam, Muhammad, Payam Shafigh, Mohammad Alizadeh Nomeli, and Mohd Zamin Jumaat. 2017. "Manufacturing of High-Strength Lightweight Aggregate Concrete Using Blended Coarse Lightweight Aggregates." Journal of Building Engineering 13(July): 53–62.
- [3] ASTM E1050 12. Standard Test Method for Impedance and Absorption of Acoustical Materials Using a Tube, Two Microphones and a Digital Frequency Analysis System. Annual Book of ASTM Standards.
- [4] Bayuaji, Ridho. 2011. "Literature Study and Prospect of Porus Concrete Research as Structural Materials and Building Materials." m: 1–10.
- [5] Green. S. 2014. *Pumices Aggregates for Structural Lightweight and Internally Cured Concretes*. New Zealand: Department of Civil and Environmental Engineering University of Auckland.
- [6] Irwan, Yusril. 2013. "Manufacture and Test of Acoustic Characteristics of Coconut Fiber Composite Board,"
- [7] J. Newman, P. Owens 2003 *Properties of Lightweight Concrete, Advanced Concrete Technology Set.* Butterworth-Heinemann, Oxford.
- [8] Kristanto, Luciana, H Sugiharto, R O Wibowo, F Harijono 2013 Conventional Brick Walls and Lightweight Brick Walls, 98–105.

ICCGANT 2019

Journal of Physics: Conference Series

IOP Publishing

- [9] M.A. Mannan, H.B. Basri, M.F.M. Zain, M.N. Islam. 2002. "Effect of Curing Conditions on the Properties of OPS-Concrete." Building and Environment 37(11): 1167–1171.
- [10] NAIMA Building Insulation Committee. 2010. "Sound Control For Commercial And Residential Buildings.http://www.eaglerocksupply.com/application/files/4514/4890/6046/Sound_Control. pdf.
- [11] Nugroho, Ananto. 2017. "Effect of Rice Husk Ash on the Mechanical Properties of Lightweight Foam Concrete." Journal of Civil and Engineering 24(2): 139–44.
- [12] Nurtanto, Dwi. 2017. "Contribution of Polycarbonate Flexural Strength to Porous Concrete Plates." Journal of Civil and Environmental Engineering. 1(4): 1–6.
- [13] Putra A. 2015. "Characteristics of Lightweight Concrete with StyroFoam Fillers.
- [14] Raka, I Gusti Putu, Tavio, and Dionisius Tripriyono. 2010. "Lightweight Aggregate Concrete with Pumice Stone Substitution as Rough Aggregate Substitution. "National Conference on Civil Engineering (4): 173–80.
- [15] SNI 1974. 2011. "Indonesian National Standard Test Method for Concrete Compressive Strength with Cylinder Test Objects of the National Standardization."
- [16] SNI 3402. 2008. "Method for Testing the Weight of Structural Lightweight Concrete."
- [17] Suseno, Hendro. 2013. "The Effect of Skoria Rocks from Mount Kelud Blitar as Rough Aggregates in Structural Lightweight Concrete." Journal of Civil and Engineering 7(2): 149– 56.
- [18] T.Y. Lo, W. Tang, H. Cui. 2007. "The Effects of Aggregate Properties on Lightweight Concrete." Building and Environment 42(8): 3025–29.
- [19] Tjokrodimulyo, K. 2007. Concrete Technology. Yogyakarta: KMTS Engineering Faculty, Universitas Gajah Mada.
- [20] Yew, Ming Kun, Hilmi Bin Mahmud, Bee Chin Ang, and Ming Chian Yew. 2014. "Effects of Oil Palm Shell Coarse Aggregate Species on High Strength Lightweight Concrete." 2014.