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Judul Jurnal Ilmiah (Artikel) : Effect of Spacing on Flow Field Characteristic of Tube Artificial Reefs with Parallel Formation by CFD

Jumlah Penulis : 6 orang (Mohammad Tauviqirrahman, Sugiyanto, **Eflita Yohana**, Mulyadi, Jamari and Muchammad)

Status Pengusul : penulis Ke-3

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Prof. Dr. Moh. Djaeni, S.T., M.Eng.
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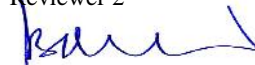
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Effect of spacing on flow field characteristic of tube artificial reefs with parallel formation by CFD

Tauviquirrahman M.^a, Sugiyanto^a, **Yohana E.**^a, Mulyadi^a, Jamari^a, Muchammad^b[Save all to author list](#)^a Department of Mechanical Engineering, Faculty of Engineering, Diponegoro University, Semarang, Central Java, Indonesia^b Laboratory for Surface Technology and Tribology, Faculty of Engineering Technology, University of Twente, Drienerloolan 5, Postbus 217, Enschede, 7500 AE, Netherlands1 36th percentile
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Abstract

In addition to attracting to fish, the flow field characteristics around Artificial Reefs (ARs) are key factors to prevent beach erosion. In the present study, research on hydrodynamics of artificial reefs primarily focusing on numerical simulation is conducted. The tube artificial reefs with parallel formation is analyzed based on comprehensive three-dimensional Computational Fluid Dynamic (CFD) approach by Renormalization Group (RNG) k-ε turbulent model with respect to the length of slow flow region. The arrangement of artificial reefs is applied varying the spacing between the AR units both in transversal and longitudinal direction. The numerical results indicate that a greater artificial reef effect dealing with the slow flow region is obtained when the distance between the AR units of artificial reef

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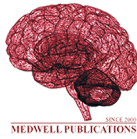
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Effect of Spacing on Flow Field Characteristic of Tube Artificial Reefs with Parallel Formation by CFD

¹Mohammad Tauviquirrahman, ¹Sugiyanto, ¹Eflita Yohana, ¹Mulyadi, ¹Jamari and ²Muchammad

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Abstract: In addition to attracting to fish, the flow field characteristics around Artificial Reefs (ARs) are key factors to prevent beach erosion. In the present study, research on hydrodynamics of artificial reefs primarily focusing on numerical simulation is conducted. The tube artificial reefs with parallel formation is analyzed based on comprehensive three-dimensional Computational Fluid Dynamic (CFD) approach by Renormalization Group (RNG) $k-\epsilon$ turbulent model with respect to the length of slow flow region. The arrangement of artificial reefs is applied varying the spacing between the AR units both in transversal and longitudinal direction. The numerical results indicate that a greater artificial reef effect dealing with the slow flow region is obtained when the distance between the AR units of artificial reef is relatively close. According to the results, the largest slow flow region is achieved when the three rows of AR units is used. This result can be considered as a guide to reduce the beach erosion.

Key words: Abrasion, Artificial Reef (AR), Computational Fluid Dynamic (CFD), slow flow region, transversal, longitudinal

INTRODUCTION

Artificial Reefs (ARs) have been extensively used to increase total biomass production including fish when they are deployed in the sea (Bohnsack and Sutherland, 1985). Recent studies have presented the significant effect of flow fields around reefs from the perspective of ecological term and hydrodynamic term. Based on hydrodynamic point of view of the artificial reef, Ontowirjo and Armono (2003) using a numerical modeling approach observed the hydrodynamic parameters (i.e., particle velocities, fluid flows, wave breaking and dissipation of wave energy) of a, specially, shaped submerged structure to reduce the offshore waves energy as well as to provide a safe and productive environment for fish. Miao and Xie (2007) studied the effects of water-depth on the hydrodynamic force of the artificial reef by simulating regular and irregular waves. They found that in the ultra-shallow water hydrodynamic force increases very evidently with the decrease of water-depth. Jiang *et al.* (2010, 2013) developed a numerical method to investigate the hydrodynamic

characteristic of artificial reef and found that the numerical simulation results are in a good agreement with results observed by experimental means. Thus, they suggested that the numerical simulation method can be applied to predict the hydrodynamic behavior associated with artificial reefs. Other interesting result was drawn by Woo *et al.* (2014). They proposed a numerical method which can be applied to predict the drag coefficients of the artificial reefs. Later, more works have been conducted by Kim *et al.* (2014) focusing not only for drag coefficients but also for wake region and structural response of the general ARs to make more attractions to marine bio creatures and the stability in water flow.

The issue of what shape of artificial reef can affect very much the flow fields has also attracted significant attention from engineers and marine ecologists. Liu *et al.* (2012) used the numerical simulation and experiment methods to study the flow fields within and around a hollow cube artificial reef varying the sizes of hollows. Later, Liu *et al.* (2013) studied the flow field characteristics around star-shaped artificial reefs. In their research, they discussed the influence of arrangement and spacing on

A New Type of Strongly Faint Continuous Mappings and Their Applications in Topological Spaces

Alaa M.F. Al. Jumaili, Alaa A. Auad and Majid Mohammed Abed
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Ramadi, Iraq

Abstract: In the present study, we introduce and investigate a new strong form of faint continuity called strongly faint δ - β -continuous mappings by using the concept of δ - β -open sets. Relationships among strongly faint δ - β -continuous mappings and δ - β -connected Spaces, δ - β -normal spaces and δ - β -compact spaces are investigated. Several characterizations and interesting properties concerning strongly faint δ - β -continuous mappings are obtained. Also, the relationships between strongly faint δ - β -continuous mappings and graphs are investigated. Furthermore, the relationships between strongly faint δ - β -continuous mappings and other of well-known types of strongly faint continuous mappings are also given.

Key words: δ - β -open sets, δ - β -regular space, strongly δ - β -continuous, strongly faint δ - β -continuous, mappings, investigated

INTRODUCTION

The notion of continuity is an important concept in general topology as well as all branches of mathematics of course its weak forms and strong forms of continuity are important, too. Recent progress in the study of characterizations and generalizations of continuity, compactness, connectedness, separation axioms etc. has been done by means of several generalized closed sets. Generalized closed sets are now well-known important notions in topology and its applications. Many topologists are focusing their research on these topics and this amounted to many important and useful results. By Levine (1970) introduced the first step of generalizing closed set. As a generalization of closed sets, e^* -Closed sets and the related sets were introduced and studied by Ekici (2008a-c, 2009) and Hatir and Noiri (2006). Nasef and Noiri (1996) introduced three classes of strong forms of faintly continuity namely: strongly faint semicontinuity, strongly faint precontinuity and strongly faint β -continuity. Nasef (2009) defined strong forms of faint continuity under the terminologies strongly faint α -continuity and strongly faint γ -continuity, Recently, Farhan and Yang (2015) introduced and investigated a new class of strong continuous functions called strongly θ - δ - β -continuous functions. As well, Caldas and Jafari (2011) introduced a new class of mappings, called strongly faint e -Continuous mappings, the purpose of the present this study is to introduce and investigate

another new strong form of faint continuity namely strongly faint δ - β -continuous mappings. Several characterizations and basic properties concerning strongly faint δ - β -continuous mappings are obtained. Moreover, relationships between strongly faint δ - β -continuous mappings and graphs are discussed.

MATERIALS AND METHODS

Throughout, the present study, (X, T) and (Y, T^*) (or simply X and Y) mean topological spaces on which no separation axioms are assumed unless explicitly stated. For any subset A of X , the closure and interior of A are denoted by $Cl(A)$ and $Int(A)$, respectively. We recall the following definitions which will be used often throughout this study.

Let X be a topological space. A subset A of X is called α -open (Njastad, 1965) (resp. semi-open (Levine, 1963), pre-open (Mashhour *et al.*, 1982), β -open (El-Monsef *et al.*, 1983), γ -open (El-Atik, 1997) δ -pre-open (Raychaudhuri and Mukherjee, 1993) if $A \subset Int(Cl(Int(A))$ (resp. $A \subset Cl(Int(A))$, $A \subset Int(Cl(A))$, $A \subset Cl(Int(Cl(A)))$, $A \subset Int(Cl(A)) \cup Cl(Int(A))$, $A \subset Int(Cl_b(A))$). The family of all α -open (resp., semi-open, preopen, β -open, γ -open) sets in X are denoted by $\alpha\Sigma(X, T)$ (resp. $S\Sigma(X, T)$, $P\Sigma(X, T)$, $\beta\Sigma(X, T)$, $B\Sigma(X, T)$).

A point $x \in X$ is called a θ -cluster (Velicko, 1968) (resp. δ -cluster (Velicko, 1968)) point of A if $Cl(V) \cap A \neq \emptyset$ (resp. $Int(Cl(V)) \cap A \neq \emptyset$) for every open set V of X containing x .

A Study on the Prevention of Smombie's Accidents by Satellite Information

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Abstract: Smombie (Smartphone+Zombie) is a new word meaning smartphone addict. It is named because it is like a Zombie when walking around while watching a smartphone. The Smombies are increasing in proportion to the spread of smart phones and the development of application functions of smart phones and also accidents are increasing which is becoming a serious social problem. In this study, we propose to add a system that generates a warning sound in the smartphone itself to prevent accidents caused by Smombies. A study on the prevention of accidents caused by Smombies occurred in warning sounds when start walking while watching a smartphone but it is not used well because of the ineffective beep in too wide a situation. In order to compensate for such shortcomings, this study is a study on aggressive prevention system that can prevent danger by ringing a warning sound by checking the distance, access speed and scale between the smartphone and the dangerous places and objects. The Smombie accident prevention system uses a function of sharing a Wireless Sensor Network (WSN), a Global Position System (GPS) and a Geographical Information System (GIS) using a satellite.

Key words: Smartphone, Zombie, accident prevention, warning sound, satellite, system

INTRODUCTION

The new word 'Smombie', a combination of a smartphone and a Zombie, It is a term used to refer to a person who is addicted to a smartphone and who walks while walking on the street without a soul. The function of the smartphone fascinates humans and falls enough to become addictive, so, it gets immersed when walking, so, it can be seen as if there is no soul. This phenomenon has caused various accidents and has become a social problem in many countries of the world. In this age, smart phones are a useful device for everyone to own as a necessity. Besides the other side of the earth as well as those in outer space, you can do video calls as well, you can quietly send and receive letters with SNS (Social Net-work Service), also search various information Then, using various applications, games can also be enjoyed. In addition, the functions of the smartphone are combined with the functions of AI (Artificial Intelligence) and IoT (Internet of Technology) and are entering a new age far beyond the ubiquitous environment. In particular, gradually turning into a family's era in nuclear families and challenging marriage and childbirth, recently he has also played the role of a personal secretary and healed loneliness. However, the more features of smartphones are the more people are seen being addicted to poisoning phenomena which is a problem of a new modern society.

The poisoning phenomenon is a big problem in immersing in smart phones while walking on the street (Hyung-Jin *et al.*, 2007; Sang-Hyuk and Chang-Dong, 2011; Dong, 2013; Kyu-Young and Yoon-hee, 2014; Jang *et al.*, 2013; Seok-Yong *et al.*, 2012; Bum *et al.*, 2012).

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Addiction status of smartphone: Smartphones are able to socialize with others through information sharing and interactive communication and Social Network Service (SNS) and can lead a wider life through information retrieval, various applications, games and music appreciation. However, excessively immersed in smartphones, they can't concentrate on other things and malfunctioning problems that can not escape from smartphone as soon have occurred. In particular, the younger the age, people fall into the charm easily in the smartphone's environment because self-deterrence is poor. unconsciously seeing the smartphone, the behavior became a habit and changed into poisoning. Smartphone addiction makes it impossible for you to stay away from smartphones for a moment and even when you have a smartphone, you are constantly looking into it and feel nervous about doing something. These smartphone poisoning phenomena finally, got to the custom which I can not keep my eyes on smartphones while walking the