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

Judul (Artikel)	:	Linear Programming with Fuzzy Variable Method for Solving Wastewater Treatment Plant (WWTP) Problem Penulis : T R Pratiwi, Sumarsih and B Surarso		
Jumlah Penulis	:	3 orang		
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Identitas Jurnal Ilmiah	:	a.	Nama Prosiding	: Journal of Physics: Conference Series. Journal of Physics: Conf. Series 1217 (2019) 012072..
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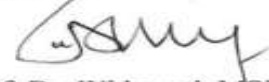
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Prof. Dr. Heri Sutanto, SSi., MSi
NIP. 197502151998021001
Unit kerja : Departemen Fisika,
FSM UNDIP

Reviewer I



Prof. Dr. Widowati, MSi
NIP. 196902141994032002
Unit kerja : Departemen
Matematika, FSM UNDIP

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- Kelengkapan unsur dan kualitas terbitan cukup baik.

Semarang 7-11-2019
Reviewer 1


Prof. Dr. Widowati, MSi
NIP. 196902141994032002
Unit kerja : Departemen Matematika, FSM UNDIP

**LEMBAR
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Total = (100%)	30,00			27,5
Nilai Pengusul = 40% x 1/2 x 27,5 = 5,5				

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- Artikel telah ditulis sesuai panduan dan lengkap.
- Pembahasan sesuai teori dan author telah menerapkan simulasi di WWTP, Kedalaman sudah baik.
- Kemutakhiran data bagus, similarity 4% dan sesuai dengan metodologi penelitian.
- Ada kesalahan cetak tabel pada teks di pendahuluan referensi minim hanya 10 buah dan kurang up to date. .

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Journal of Physics: Conference Series

Volume 1217, Issue 1, 17 June 2019, Article number 12072

8th International Seminar on New Paradigm and Innovation on Natural Sciences and Its Application, ISNPINSA 2018; Semarang, Central Java; Indonesia; 26 September 2018 through ; Code 148936

Linear Programming with Fuzzy Variable Method for Solving Wastewater Treatment Plant (WWTP) Problem (Conference Paper) (Open Access)

Pratiwi, T.R. ✉, **Sunarsih**, Surarso, B.

Department of Mathematics, Faculty of Science and Mathematics, Diponegoro University, Jl. Prof. Soedharto, SH, Tembalang Semarang, 50275, Indonesia

Abstract

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The waste load of organic matters in the stabilization ponds is degraded through biological treatment, that is to reduce or decrease the level of pollutants of organic matters by using and utilizing microorganisms. This problem will be solved using a mathematical model, that is linear programming with fuzzy variables on the Wastewater Treatment Plant (WWTP). The method in the case of Fuzzy Linear Programming (FLP) maximization is done by using simplex fuzzy method. The results of this method can be used as an evaluation method to determine the optimal waste load and the level of degradation of organic matter. © Published under licence by IOP Publishing Ltd.

SciVal Topic Prominence ⓘ

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Sewage pumping plants Waste treatment Water treatment plants

Engineering uncontrolled terms

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Wastewater treatment plants

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Growth and fabrication of 850 nm AlGaAs/GaAs vertical cavity surface emitting laser structure

N I Cabello*, P M Tingzon, H A Husay, J D Vasquez, R Jagus, K L Patrocenio, K C Gonzales, G A Catindig, E A Prieto, A Somintac, A Salvador and E Estacio

National Institute of Physics, College of Science, **University of the Philippines**
NIP Bldg, National Science Complex, Diliman, Quezon City 1101, Philippines
E-mail: ncabello@nip.upd.edu.ph

Abstract. In this work, we demonstrate the NIP's all in-house development of a vertical cavity surface emitting laser structure. The VCSEL structure grown via MBE consists of an AlAs/AlGaAs distributed Bragg reflector and an AlGaAs/GaAs quantum well designed to issue at the 850 nm region. Reflectance spectroscopy showed that the stop band is centered around the designed wavelength. The electroluminescence spectra displayed that the maximum light emission corresponded to its design. This is a crucial step in the NIP's development of semiconductor lasers, leading towards future high-speed and highly-tunable VCSEL devices.

1. Introduction

Semiconductor lasers have been at the forefront of high-speed interconnects, thanks to the development of lasers capable of operating at gigahertz speeds [1]. Expansion to other applications such as proximity sensing [2] and light detection and ranging (LIDAR) [3] have driven further research on this field. For high-speed devices, switching speeds at the gigahertz range are desired [1], while high tuning speeds and increased tunability are sought for wavelength-tunable devices [4]. With its molecular beam epitaxy (MBE) and device fabrication facilities, the National Institute of Physics (NIP) has recently renewed its research thrust in this field, most notably on vertical cavity surface emitting lasers (VCSELs).

The VCSEL is a type of semiconductor laser with light emission orthogonal to the wafer plane. Its main advantages over other conventional semiconductor lasers such as edge-emitting lasers are the ease of coupling to optical fibers, direct wafer scale probing and low threshold operation [5]. A standard VCSEL design is composed of an optical cavity with an active region in the center, which is usually a quantum well (QW). The optical cavity is then sandwiched between two distributed Bragg reflectors (DBRs), which are highly reflecting mirrors composed of alternating high and low refractive index medium materials. The stop band of the DBR, which is the wavelength region with the highest reflectance, should coincide with the QW emission wavelength. Oxidation apertures, usually situated near the active region, are also employed for optical and current confinement [6].

In this paper, we report on the all in-house development of an AlGaAs/GaAs-based DBR VCSEL structure at the chip level. The whole process entails the whole production processes: the growth of the layers, device fabrication, and characterization of both as-grown and device-fabricated layers. Oxidation was also performed to explore the possibility of current and optical confinement effects [6].

2. Experimental Details



An investigation of a CT noise reduction using a modified of wiener filtering-edge detection

C Anam^{1*}, T Fujibuchi², T Toyoda², N Sato², F Haryanto³, R Widita³, I Arif³ and G Dougherty⁴

¹ Department of Physics, Faculty of Mathematics and Natural Sciences, Diponegoro University, Jl. Prof. Soedarto SH, Tembalang, Semarang 50275, Indonesia.

² Department of Health Sciences, Faculty of Medical Sciences, Kyushu University, 3-1-1 Maidashi, Higashi-ku, Fukuoka 812-8582, [Japan](#).

³ Department of Physics, Faculty of Mathematics and Natural Sciences, Bandung Institute of Technology, Ganesha 10, Bandung 40132, [Indonesia](#).

⁴ Applied Physics and Medical Imaging, California State University Channel Islands, Camarillo, CA 93012, [USA](#).

E-mail: anam@fisika.undip.ac.id

Abstract. The aims of this study were to investigate the noise reduction in a CT image using a modified Wiener filtering-edge detection method. We modified the noise reduction algorithm of a combination of the Wiener filter and edge detection by addition of a dilation stage after edge detection. We then evaluated kernel size of the Wiener filter, threshold values in the edge detection, and size of structuring elements in the dilation process. Images of adult anthropomorphic and self-built wire phantoms were acquired by the new 4-row multislice CT Toshiba Alexion™. The images of the anthropomorphic phantom were used for a visual evaluation, while the images of the wire-phantom were used to obtain the spatial resolution and noise of the images. A Wiener filter-edge detection filter coupled with dilation, potentially reduced more CT noise. We found that the spatial resolution and noise of the filtered images were influenced by the size of the Wiener filter kernel, threshold of edge detection, and size of structuring element.

1. Introduction

Several approaches have been proposed to reduce CT dose without compromising image quality. One method has been proposed is the tube current modulation (TCM) [1, 2]. In TCM, tube currents decrease and increase proportionally with the decreasing and increasing attenuation of body parts [3]. Tube current modulation could be implemented by the rotation of the x-ray tube (angle-modulation) or by modulation in the direction of the longitudinal axis (Z-modulation), or a combination of both [4]. Another method proposed for reducing the dose is to utilize iterative reconstruction (IR) [5], instead of filtered back-projection (FBP). In fact, the IR technique is not only iterative during reconstruction but also iteratively processes in either the sinogram [6] or image spaces [7], in accordance with the specific physical modeling or statistical approaches. There are several IR software products used by major CT vendors including ASIR, AIDR, VEO, IRIS, SAFIRE, and iDose [8]. However, the details of the algorithms are very sparse, and they are still considered proprietary algorithms [5].

Another method that can be used for CT dose reduction is the use of noise reduction in the image space [8]. A noisy image due to acquisition with a small tube current-time (mAs) parameter can have





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