

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

Judul Jurnal Ilmiah (Artikel) : A Simplified Method for The Water-Equivalent Diameter Calculation to Estimate Patient Dose in CT Examinations

Nama/ Jumlah Penulis : Choirul Anam, Idam Arif, Freddy Haryanto, Rena Widita, Fauzia P Lestari, **Kusworo Adi**, Geoff Dougherty/ 7 orang

Status Pengusul : Penulis ke- 6

Identitas Jurnal Ilmiah :

- a. Nama Jurnal : Radiation Protection Dosimetry
- b. Nomor ISSN : 0144-8420
- c. Vol, No., Bln Thn : 185, 1, November 2019
- d. Penerbit : Oxford University Press
- e. DOI artikel (jika ada) : <https://doi.org/10.1093/rpd/ncy214>
- f. Alamat web jurnal : <https://academic.oup.com/rpd/article/185/1/34/5224758>
- Alamat Artikel : <https://academic.oup.com/rpd/article-pdf/185/1/34/31155801/ncy214.pdf>
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d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	11,90	12,00	11,95
<b>Total = (100%)</b>	<b>39,70</b>	<b>40,00</b>	<b>39,85</b>

Semarang, 6 Mei 2020

**Reviewer 1**



Prof. Dr. Muhammad Nur, DEA  
NIP. 195711261990011001  
Unit Kerja : Departemen Fisika - FSM UNDIP

**Reviewer 2**



Prof. Dr. Heri Sutanto, SSi, MSi  
NIP. 197502151998021001  
Unit Kerja : Departemen Fisika - FSM UNDIP

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**2. Ruang lingkup dan kedalaman pembahasan:**

Pembahasan terhadap citra CT Scan dengan menggunakan metoda yang diusulkan dalam artikel cukup komprehensif. Diskusi telah dilakukan dengan para peneliti lain melalui referensi yang disitasi. Sebuah artikel yang menarik.

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Data dan referensi mutakhir. Metoda standar dibidangnya dan akan bisa direfleksikan oleh peneliti lain sebidang

**4. Kelengkapan unsur dan kualitas terbitan:**

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**Reviewer 1**



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<b>Total = (100%)</b>	<b>40,00</b>			
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Ruang lingkup dan kedalaman pembahasan sudah diuraikan dengan sangat baik dan mendalam. Konfirmasi atau perbandingan hasil dengan peneliti lain sudah dilakukan. Tahapan penentuan diameter setara air untuk estimasi dosis pasien pada pemeriksaan CT Scan diungkapkan dengan jelas.

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Semarang, 6 Mei 2020

**Reviewer 2**

Prof. Dr. Heri Sutanto, SSi, MSi  
NIP. 197502151998021001

Unit Kerja : Departemen Fisika - FSM UNDIP

## About the Journal

Radiation Protection Dosimetry covers all aspects of personal and environmental dosimetry and monitoring, for both ionising and non-ionising radiations. This includes biological aspects, physical concepts, biophysical dosimetry, external and internal personal dosimetry and monitoring, environmental and workplace monitoring, accident dosimetry, and dosimetry related to the protection of patients. Particular emphasis is placed on papers covering the fundamentals of dosimetry; units, radiation quantities and conversion factors. Papers covering archaeological dating are included only if the fundamental measurement method or technique, such as thermoluminescence, has direct application to personal dosimetry measurements. Papers covering the dosimetric aspects of radon or other naturally occurring radioactive materials and low level radiation are included. Animal experiments and ecological sample measurements are not included unless there is a significant relevant content reason.

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Year	Impact Factor	Si: Environmental Sciences	Si: Public, Environmental & Occupational Health	Si: Nuclear Science & Technology
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2017	0.822	217 out of 242	300 out of 338	22 out of 3
2016	0.917	192 out of 229	148 out of 176	20 out of 3
2015	0.894	186 out of 225	142 out of 172	19 out of 3
2014	0.913	181 out of 223	133 out of 165	20 out of 3

2013	0.861	174 out of 215	133 out of 160	19 out of 3
2012	0.909	164 out of 209	123 out of 158	16 out of 3
2011	0.822	165 out of 205	128 out of 157	20 out of 3
2010	0.966	146 out of 192	107 out of 140	16 out of 3
2009	0.707	154 out of 180	107 out of 122	17 out of 3
2008	0.951	125 out of 163	85 out of 105	11 out of 3
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3. Aird, E. G. A. A. An introduction to medical physics. Heineman Medical Books Ltd (1983) ISBN 0 433 003502.
4. Duftschmid, K. E. TLD personnel monitoring systems - the present situation. Radiat. Prot. Dosim. 2, 2-12 (1982).
5. International Commission on Radiation Units and Measurements. Determination of operational dose equivalent quantities for neutrons. ICRU Report 66. J. ICRU 1, (2001).

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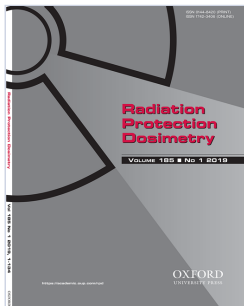
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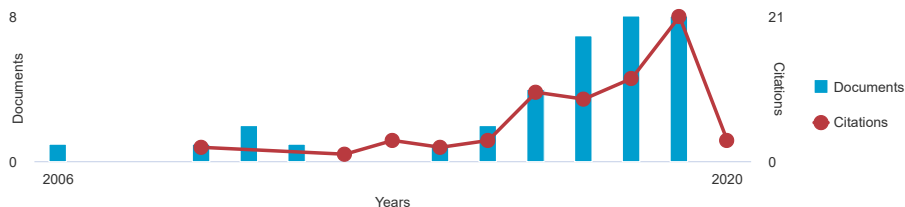
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
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Volume 185, Issue 1, 1 November 2019, Pages 42-49

## A SIMPLIFIED METHOD for the WATER-EQUIVALENT DIAMETER CALCULATION to ESTIMATE PATIENT DOSE in CT EXAMINATIONS (Article)

Anam, C.<sup>a</sup> , Arif, I.<sup>b</sup>, Haryanto, F.<sup>b</sup>, Widita, R.<sup>b</sup>, Lestari, F.P.<sup>b</sup>, Adi, K.<sup>a</sup>, Dougherty, G.<sup>c</sup> 

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<sup>c</sup>Department of Applied Physics and Medical Imaging, California State University Channel Islands, Camarillo, CA, United States


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We proposed and evaluated a water-equivalent diameter calculation without using a region of interest (ROI), ( $D_{w,t}$ ) and compared it with the results of using a ROI fitted to the patient border ( $D_{w,f}$ ). Evaluations were carried out on thoracic and head CT images. We found that the difference between  $D_{w,t}$  and  $D_{w,f}$  was within 5% for all images in the head region, and most images were within 5% (27 of the 30 patients, 90%) in the thoracic region. We also proposed a method to automatically detect and eliminate the patient table (or head support) from images and evaluated the water-equivalent diameter values after the table had been removed ( $D_{w,nt}$ ). This method was able to recognize and remove the patient table from all images used. By removing the table, the water-equivalent diameter ( $D_{w,nt}$ ) became more accurate and the difference from  $D_{w,f}$  was within 5% for all images (head and thoracic images). © 2018 The Author(s) 2019. Published by Oxford University Press. All rights reserved. For Permissions, please email: journals.permissions@oup.com.

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