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

Judul Karya Ilmiah (Artikel)	:	Automated procedure for slice thickness verification of computed tomography images: Variations of slice thickness, position from iso-center, and reconstruction filter		
Jumlah Penulis	:	4 Orang		
Status Pengusul	:	~~Penulis pertama~~/ Penulis ke-3/ ~~Penulis Korespondesi~~ **		
Identitas Jurnal Ilmiah	:	a. Nama Jurnal	:	Journal of Applied Clinical Medical Physics
		b. Nomor ISSN	:	1526-9914
		c. Volume, Nomor, Bulan, Tahun	:	Vol. 22 , No. 7, Juli 2021
		d. Penerbit	:	American Association of Physicists in Medicine
		e. DOI artikel (jika ada)	:	https://doi.org/10.1002/acm2.13317
		f. Alamat web jurnal	:	https://aapm.onlinelibrary.wiley.com/doi/10.1002/acm2.13317
		g. Terindeks di Scimagojr/Scopus ~~atau di….**~~		
Kategori Publikasi Jurnal Ilmiah (beri ✓pada kategori yang tepat)	:	[√] ~~Jurnal Ilmiah Internasional~~ / Internasional Bereputasi **		
		[ ] Jurnal Ilmiah Nasional Terakreditasi		
		[ ] Jurnal Ilmiah Nasional/Nasional Terindeks di DOAJ, CABI, COPERNICUS**		

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Reviewer		Nilai Rata-rata
	Reviewer I	Reviewer II	
a. Kelengkapan unsur isi jurnal (10%)	4	4	4
b. Ruang lingkup dan kedalaman pembahasan (30%)	12	12	12
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	11	11	11
d. Kelengkapan unsur dan kualitas penerbit (30%)	12	12	12
Total = (100%)			39
Nilai untuk Pengusul : (40% x 39) / 3 = 5,2			

Semarang, 26 Mei 2022

Reviewer 1

Prof. Dr. Drs. Wahyu Setia Budi, M. S.
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Bidang ilmu/Unit kerja : Fisika/Fakultas Sains dan Matematika

Reviewer 2

Prof. Dr. Kusworo Adi, S.Si., M.T.
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Bidang ilmu/Unit kerja : Fisika/Fakultas Sains dan Matematika

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		Turnitin : 14%
		g. Terindex : Scopus (Q2 SJR = 0,66 H-index = 52)

Kategori Publikasi Jurnal Ilmiah (beri ✓pada kategori yang tepat) :

- [√] ~~Jurnal Ilmiah Internasional~~/Internasional Bereputasi
- [ ] Jurnal Ilmiah Nasional Terakreditasi
- [ ] Jurnal Ilmiah Nasional Tidak Terakreditasi

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal Jurnal Ilmiah			Nilai Akhir Yang Diperoleh
	Internasional [√]	Nasional Terakreditasi [ ]	Nasional Tidak Terakreditasi [ ]	
a. Kelengkapan unsur isi jurnal (10%)	4			4
b. Ruang lingkup dan kedalaman pembahasan (30%)	12			12
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	12			11
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12			12
Total = (100%)	**40**			39
Nilai Pengusul =				0,4 x 40/3 = 5,3

Catatan Penilaian artikel oleh Reviewer :

1. **Kesesuaian dan kelengkapan unsur isi jurnal:**
   Sesuai dan lengkap
2. **Ruang lingkup dan kedalaman pembahasan:**
   Baik VF dan DP pustaka lebih dari 5 tahun,
3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:**
   Baik
4. **Kelengkapan unsur dan kualitas terbitan:**
   lengkap kualitas baik

Semarang, 26 Mei 2022
Reviewer 1

Prof. Dr. Drs. Wahyu Setia Budi, M. S.
NIP. 195806151985031002
Unit Kerja : Fisika
Bidang Ilmu: Fakultas Sains dan Matematika

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- [ ] Jurnal Ilmiah Nasional Tidak Terakreditasi

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal Jurnal Ilmiah			Nilai Akhir Yang Diperoleh
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c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	12			11
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12			12
Total = (100%)	**40**			**39**
Nilai Pengusul = 40% x 1/3 x 39 = 5,2				

Catatan Penilaian artikel oleh Reviewer :

1. **<u>Kesesuaian dan kelengkapan unsur isi jurnal:</u>**
   Keseuaian isi jurnal sangat sesuai dan lengkap seperti yang terlihat pada abstrak, pendahuluan, prosedur eksperimen, hasil dan pembahasan, sampai pada kesimpulan dan dafar pustaka yang digunakan.
2. **<u>Ruang lingkup dan kedalaman pembahasan:</u>**
   Paper ini membahas tentang prosedur untuk mengotomatisasi verifikasi ketebalan irisan pada performance phantom AAPM CT dan validasinya untuk variasi ketebalan irisan, posisi dari isocenter, dan filter rekonstruksi, yang dikembangkan menggunakan MATLAB R2015b. Hasil otomatisasi ini sebanding dengan hasil dari pendekatan manual. Prosedur otomatisasi ini akurat untuk memperoleh ketebalan irisan.
3. **<u>Kecukupan dan kemutakhiran data/informasi dan metodologi:</u>**
   Data-data hasil yang diperoleh dalam penelitian ini sangat baik dengan didukung metodologi riset sangat yang tepat selain itu didukung dengan referensi terkini dengan jumlah referensi kurang dari 5 tahun sejumlah 13.
4. **<u>Kelengkapan unsur dan kualitas terbitan:</u>**
   Paper ini diterbitkan dalam jurnal berkualitas Q2 dengan SJR 0,68 oleh American Association of Physicists in Medicine dengan unsur-unsur yang lengkap serta kualitas yang sangat baik.

Semarang, 6 Juni 2022
Reviewer 2

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Automated procedure for slice thickness verification of computed tomography images: Variations of slice thickness, position from iso-center, and reconstruction filter

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Abstract

Purpose: The purpose of this study is to automate the slice thickness verification on the AAPM CT performance phantom and validate it for variations of slice thickness, position from iso-center, and reconstruction filter. Methods: An automatic procedure for slice thickness verification on AAPM CT performance phantom was developed using MATLAB R2015b. The stair object image within the phantom was segmented, and the middle stair object was located. Its angle was determined using the Hough transformation, and the image was rotated accordingly. The profile through this object was obtained, and its full-width of half maximum (FWHM) was automatically measured. The FWHM indicated the slice thickness of the image. The automated procedure was applied with variations in

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RADIATION ONCOLOGY PHYSICS

Impact of prostate focused alignment on planned pelvic lymph node dose

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Abstract

Purpose: Prostate patients with positive lymph node margins receive an initial course of 45 Gy to the planning target volume (PTV) comprised of prostate, seminal vesicles, and lymph nodes with a 1-cm margin. The prostate is localized via implanted fiducial markers before each fraction is delivered using portal-imaging. However, the pelvic lymph nodes are affixed to the bony anatomy and are not mobile in concert with the prostate. The aim of this study was to determine whether a significant difference in pelvic lymph node coverage exists between planned and delivered external beam therapy treatments for these patients.

Methods: The recorded prostate motions were gathered for 19 patients; conjointly the pelvic lymph node motions were determined by manual registration of the bony anatomy in the kV-images. The difference between the prostate and the bony anatomy coordinates was input into Eclipse as field shifts to represent the deviation in planned vs delivered pelvic lymph node coverage.

Results: Structure volume at V(100) was recorded for each patient for two structures: summed pelvic lymph nodes (LN CTV) and pelvic lymph nodes +1 cm margin (LN PTV) to express their contribution to the PTV. For the LN PTV, the average difference between the planned coverage and calculated delivered coverage was 3.5%, with a paired *t*-test value of $P = 0.005$. Based upon bony anatomy registration, 26% of patients received less than 95% dose coverage using V(100) criteria for LN PTV. Dose value differences between the two plans at minimum were 6.96 ± 6.23 Gy, at mean were 0.54 ± 0.40 Gy, and at maximum were 0.10 ± 0.29 Gy. For the LN CTV, the average difference between the planned coverage and calculated delivered coverage was 1%, with a paired *t*-test value of $P = 0.53$.

Conclusions: The results indicate a significant difference exists between the planned coverage and calculated delivered coverage for the LN PTV. There was no significant difference found for the LN CTV. We conclude that lymph node motion must be considered with the prostate motion when aligning patients before each fraction.

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RADIATION ONCOLOGY PHYSICS

WILEY

A novel method to determine linac mechanical isocenter position and size and examples of specific QA applications

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Abstract

The most important geometric characteristic of stereotactic treatment is the accuracy of positioning the target at the treatment isocenter and the accuracy of directing the radiation beam at the treatment isocenter. Commonly, the radiation isocenter is used as the reference for the treatment isocenter, but its method of localization is not strictly defined, and it depends on the linac-specific beam steering parameters. A novel method is presented for determining the linac mechanical isocenter position and size based on the localization of the collimator axis of rotation at arbitrary gantry angle. The collimator axis of rotation position is determined from the radiation beam center position corrected for the focal spot offset. The focal spot offset is determined using the image center shift method with a custom-design rigid phantom with two sets of ball-bearings. Three specific quality assurance (QA) applications and assessment methods are also presented to demonstrate the functionality of linac mechanical isocenter position and size determination in clinical practice. The first is a mechanical and radiation isocenters coincidence test suitable for quick congruence assessment of these two isocenters for a selected energy, usually required after a nonroutine linac repair and/or energy adjustment. The second is a stereotactic beam isocentricity assessment suitable for pretreatment stereotactic QA. The third is a comprehensive linac geometrical performance test suitable for routine linac QA. The uncertainties of the method for determining mechanical isocenter position and size were measured to be 0.05 mm and 0.04 mm, respectively, using four available photon energies, and were significantly smaller than those of determining the radiation isocenter position and size, which were 0.36 mm and 0.12 mm respectively. It is therefore recommended that the mechanical isocenter position and size be used as the reference linac treatment isocenter and a linac mechanical characteristic parameter respectively.

KEY WORDS

mechanical isocenter, quality assurance, radiation isocenter, WL test