

## **DAFTAR PUSTAKA**

- Ahsan, F. N. (2021). ANALISIS DOSIS DAN WAKTU RADIASI UNTUK CARBON ION RADIATION THERAPY (CIRT) PADA NON-SMALL CELL LUNG CANCER (NSCLC) MENGGUNAKAN PROGRAM PHITS 3.24.
- Avazbek, N. (2013). Joint Institute for Nuclear Research, Dubna, Russia.
- Barta, J. A., Powell, C. A., & Wisnivesky, J. P. (2019). Global Epidemiology of Lung Cancer. *Annals of Global Health*, 85(1), 8.  
<https://doi.org/10.5334/aogh.2419>
- Bilalodin. (2020). Simulasi Desain Beam Shaping Assembly (BSA) Double Layer dan Optimasinya Menggunakan Algoritma Genetika (AG) guna Menghasilkan Neutron Epitermal untuk Boron Neutron Capture Therapy (BNCT).
- Bisello, S., Cilla, S., Benini, A., Cardano, R., Nguyen, N. P., Deodato, F., Macchia, G., Buwenge, M., Cammelli, S., Wondemagegnehu, T., Uddin, A. F. M. K., Rizzo, S., Bazzocchi, A., Strigari, L., & Morganti, A. G. (2022). Dose–Volume Constraints fOr oRganS At risk In Radiotherapy (CORSAIR): An “All-in-One” Multicenter–Multidisciplinary Practical Summary. *Current Oncology*, 29(10), 7021–7050.  
<https://doi.org/10.3390/curroncol29100552>
- Brierley, J., Gospodarowicz, M. K., & Wittekind, C. (Eds.). (2017). TNM classification of malignant tumours (Eighth edition). John Wiley & Sons, Inc.

- Burnet, N. G. (2004). Defining the tumour and target volumes for radiotherapy. *Cancer Imaging*, 4(2), 153–161. <https://doi.org/10.1102/1470-7330.2004.0054>
- Chaudhry, R., & Bordoni, B. (2023, July 24). Anatomy, Thorax, Lungs. Treasure Island (FL): StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK470197/>
- Chu, W. T., Ludewigt, B. A., & Renner, T. R. (1993). Instrumentation for treatment of cancer using proton and light-ion beams. *Review of Scientific Instruments*, 64(8), 2055–2122. <https://doi.org/10.1063/1.1143946>
- Debela, D. T., Muzazu, S. G., Heraro, K. D., Ndalamia, M. T., Mesele, B. W., Haile, D. C., Kitui, S. K., & Manyazewal, T. (2021). New approaches and procedures for cancer treatment: Current perspectives. *SAGE Open Medicine*.
- Demizu, Y., Fujii, O., Iwata, H., & Fuwa, N. (2014). Carbon Ion Therapy for Early-Stage Non-Small-Cell Lung Cancer. *BioMed Research International*, 2014, 1–9. <https://doi.org/10.1155/2014/727962>
- Fianto, M. M. D., Sardjono, Y., Harto, A. W., Triatmoko, I. M., Wijaya, G. S., & Kasesaz, Y. (2022). Dose Distribution Analysis of Proton Therapy for Medulloblastoma Cancer with PHITS 3.24. *24(1)*.
- Fossati, P., Matsufuji, N., Kamada, T., & Karger, C. P. (2018). Radiobiological issues in prospective carbon ion therapy trials. *Medical Physics*, 45(11). <https://doi.org/10.1002/mp.12506>

- Ganti, A. K. P., Loo, B. W., Bassetti, M., Blakely, C., Chiang, A., D'Amico, T. A., D'Avella, C., Dowlati, A., Downey, R. J., Edelman, M., Florsheim, C., Gold, K. A., Goldman, J. W., Grecula, J. C., Hann, C., Iams, W., Iyengar, P., Kelly, K., Khalil, M., ... Hughes, M. (2021). Small Cell Lung Cancer, Version 2.2022, NCCN Clinical Practice Guidelines in Oncology. *Journal of the National Comprehensive Cancer Network*, 19(12), 1441–1464.  
<https://doi.org/10.6004/jnccn.2021.0058>
- Grimes, D. R. (2020). Estimation of the oxygen enhancement ratio for charged particle radiation. *Physics in Medicine & Biology*, 65(15), 15NT01.  
<https://doi.org/10.1088/1361-6560/ab9371>
- Gupta, K. K., Dhoble, N. S., Singh, V., & Dhoble, S. J. (2020). Significance of TL Radiation Dosimetry of Carbon Ion Beam in Radiotherapy. In V. Dubey, S. Som, & V. Kumar (Eds.), *Luminescent Materials in Display and Biomedical Applications* (1st ed., pp. 200–228). CRC Press.  
<https://doi.org/10.1201/9780429025334-11>
- Inaniwa, T., Kanematsu, N., Matsufuji, N., Kanai, T., Shirai, T., Noda, K., Tsuji, H., Kamada, T., & Tsujii, H. (2015). Reformulation of a clinical-dose system for carbon-ion radiotherapy treatment planning at the National Institute of Radiological Sciences, Japan. *Physics in Medicine and Biology*, 60(8), 3271–3286. <https://doi.org/10.1088/0031-9155/60/8/3271>
- Internationale Atomenergie-Organisation, & International Commission on Radiation Units and Measurements (Eds.). (2008). *Relative biological effectiveness in Ion Beam Therapy*. International Atomic Energy Agency.

- Ishikawa, H., Tsuji, H., Murayama, S., Sugimoto, M., Shinohara, N., Maruyama, S., Murakami, M., Shirato, H., & Sakurai, H. (2019). Particle therapy for prostate cancer: The past, present and future. *International Journal of Urology*, 26(10), 971–979. <https://doi.org/10.1111/iju.14041>
- Ivonia, I. (2021). Analisis Karakteristik Percentage Depth Dose (PDD) dan Profil Dosis pada Pesawat Accelerator (LINAC) 6-25 MV Menggunakan PHITS Code.
- Iwata, Y., Nishiuchi, M., Noda, E., Noda, K., Sakaki, H., Saotome, N., Saraya, Y., Sato, S., Shirai, T., Tansho, R., Fujita, T., Fujimoto, T., Furukawa, T., Hara, Y., Kondo, K., Mizushima, K., Murakami, T., & Muramatsu, M. (2018). Development of Carbon-Ion Radiotherapy Facilities at NIRS. *IEEE Transactions on Applied Superconductivity*, 28(3), 1–7. <https://doi.org/10.1109/TASC.2017.2785835>
- Jäkel, O. (2020). Physical advantages of particles: Protons and light ions. *The British Journal of Radiology*, 93(1107), 20190428. <https://doi.org/10.1259/bjr.20190428>
- Jalut, L. L. S., Rupiasih, N. N., & Sardjono, Y. (2020). Analisis Dosis Boron pada Teknik BNCT dengan Metode Simulasi Menggunakan Program PHITS (Particle and Heavy Ion Transport Code System). 21(1).
- Jeong, J., Taasti, V. T., Jackson, A., & Deasy, J. O. (2020). The relative biological effectiveness of carbon ion radiation therapy for early stage lung cancer. *Radiotherapy and Oncology*, 153, 265–271. <https://doi.org/10.1016/j.radonc.2020.09.027>

- Jette, D., & Chen, W. (2011). Creating a spread-out Bragg peak in proton beams. *Physics in Medicine and Biology*, 56(11), N131–N138.  
<https://doi.org/10.1088/0031-9155/56/11/N01>
- Kappadath, S. C., Lopez, B. P., Salem, R., & Lam, M. G. E. H. (2021). Reassessment of the lung dose limits for radioembolization. *Nuclear Medicine Communications*, 42(10), 1064–1075.  
<https://doi.org/10.1097/MNM.0000000000001439>
- Kim, C. H., Yeom, Y. S., Petoussi-Henss, N., Zankl, M., Bolch, W. E., Lee, C., Choi, C., Nguyen, T. T., Eckerman, K., Kim, H. S., Han, M. C., Qiu, R., Chung, B. S., Han, H., & Shin, B. (2020). ICRP Publication 145: Adult Mesh-Type Reference Computational Phantoms. *Annals of the ICRP*, 49(3), 13–201. <https://doi.org/10.1177/0146645319893605>
- Kleffner, C., Ondreka, D., Weinrich, U., GSI, Darmstadt, Germany, McDaniel, F. D., & Doyle, B. L. (2009). The Heidelberg Ion Therapy (HIT) Accelerator Coming into Operation. *AIP Conference Proceedings*, 426–428.  
<https://doi.org/10.1063/1.3120065>
- Lyman, J. T., Awschalom, M., Berardo, P., Bicchsel, H., Chen, G. T. Y., Dicello, J., Fessenden, P., Goitein, M., Lam, G., McDonald, J. C., Smith, A. Ft., Haken, R. T., Verhey, L., & Zink, S. (1986). Protocol for Heavy Charged-Particle Therapy Beam Dosimetry. AAPM. <https://doi.org/10.37206/15>
- Ma, L., Men, Y., Feng, L., Kang, J., Sun, X., Yuan, M., Jiang, W., & Hui, Z. (2019). A current review of dose-escalated radiotherapy in locally

- advanced non-small cell lung cancer. *Radiology and Oncology*, 53(1), 6–14. <https://doi.org/10.2478/raon-2019-0006>
- Malygina, H. (2018). Hit reconstruction for the Silicon Tracking System of the CBM experiment.
- McNamee, C. J., Adams, A., & Sugarbaker, D. J. (2015). Overview of Anatomy and Pathophysiology of Lung Cancer. In D. J. Sugarbaker, R. Bueno, Y. L. Colson, M. T. Jaklitsch, M. J. Krasna, S. J. Mentzer, M. Williams, & A. Adams (Eds.), *Adult Chest Surgery*, 2e (1–Book, Section). McGraw-Hill Education. [accesssurgery.mhmedical.com/content.aspx?aid=1105841950](http://accesssurgery.mhmedical.com/content.aspx?aid=1105841950)
- Mohamad, O., Yamada, S., & Durante, M. (2018). Clinical Indications for Carbon Ion Radiotherapy. *Clinical Oncology*, 30(5), 317–329. <https://doi.org/10.1016/j.clon.2018.01.006>
- Niita, K., Iwase, H., Iwamoto, Y., Sato, T., Matsuda, N., Sakamoto, Y., Nakashima, H., & Sihver, L. (2011). Applicability of the PHITS Code to Heavy Ion Accelerator Facilities. *Journal of the Korean Physical Society*, 59(2(3)), 1640–1643. <https://doi.org/10.3938/jkps.59.1640>
- Noël, G., & Antoni, D. (2022). Organs at risk radiation dose constraints. *Cancer/Radiothérapie*, 26(1–2), 59–75. <https://doi.org/10.1016/j.canrad.2021.11.001>
- Nurfatthan, I. (2019). ANALISIS DOSIS DAN WAKTU TERAPI PADA TERAPI KANKER PARU-PARU BERBASIS TERAPI ION KARBON DAN BORON NEUTRON CAPTURE THERAPY MENGGUNAKAN PROGRAM PHITS.

- Park, S. H., & Kang, J. O. (2011). Basics of particle therapy I: Physics. *Radiation Oncology Journal*, 29(3), 135. <https://doi.org/10.3857/roj.2011.29.3.135>
- Sato, T., iwamoto, T., Hashimoto, S., Furuta, T., Ogawa, T., & Abe, S. (2023). User's Manual PHITS Ver. 3.30.
- Sato, Y., Honma, T., Murakami, T., Kitagawa, A., Muramatsu, M., Yamada, S., Ogawa, H., Fukushima, T., & Kobayashi, C. (1996). Status of the HIMAC Injector. 1996.
- Schardt, D., Iwase, H., Simon, R. S., & Gunzert-Marx, K. (2007).
- EXPERIMENTAL INVESTIGATION OF SECONDARY FAST NEUTRONS PRODUCED IN CARBON ION RADIOTHERAPY.**
- Proceedings of International Workshop on Fast Neutron Detectors and Applications — PoS(FNDA2006), 038.  
<https://doi.org/10.22323/1.025.0038>
- Schlaff, C. D., Krauze, A., Belard, A., O'Connell, J. J., & Camphausen, K. A. (2014). Bringing the heavy: Carbon ion therapy in the radiobiological and clinical context. *Radiation Oncology*, 9(1), 88.  
<https://doi.org/10.1186/1748-717X-9-88>
- Shiiba, T., Kuga, N., Kuroiwa, Y., & Sato, T. (2017). Evaluation of the accuracy of mono-energetic electron and beta-emitting isotope dose-point kernels using particle and heavy ion transport code system: PHITS. *Applied Radiation and Isotopes*, 128, 199–203.  
<https://doi.org/10.1016/j.apradiso.2017.07.028>

- Sung, H., Ferlay, J., Siegel, R. L., Laversanne, M., Soerjomataram, I., Jemal, A., & Bray, F. (2021). Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. CA: A Cancer Journal for Clinicians, 71(3), 209–249. <https://doi.org/10.3322/caac.21660>
- Takagi, M. (2018). Treatment outcomes of proton or carbon ion therapy for skull base chordoma: A retrospective study.
- Takakusagi, Y., Yoshida, D., Kusano, Y., Kano, K., Anno, W., Tsuchida, K., Mizoguchi, N., Serizawa, I., Katoh, H., Imura, K., Takayama, Y., Minohara, S., & Kamada, T. (2021). Dosimetric Comparison Between Carbon-ion Radiotherapy and Photon Radiotherapy for Stage I Esophageal Cancer. In Vivo.
- Taremi, M., Hope, A., Lindsay, P., Dahele, M., Fung, S., Purdie, T. G., Jaffray, D., Dawson, L., & Bezjak, A. (2012). Predictors of Radiotherapy Induced Bone Injury (RIBI) after stereotactic lung radiotherapy. Radiation Oncology, 7(1), 159. <https://doi.org/10.1186/1748-717X-7-159>
- Tomashefski, J. F., & Farver, C. F. (2008). Anatomy and Histology of the Lung. In J. F. Tomashefski, P. T. Cagle, C. F. Farver, & A. E. Fraire (Eds.), Dail and Hammar's Pulmonary Pathology (pp. 20–48). Springer New York. [https://doi.org/10.1007/978-0-387-68792-6\\_2](https://doi.org/10.1007/978-0-387-68792-6_2)
- Tsuji, H., Kamada, T., Shirai, T., Noda, K., Tsuji, H., & Karasawa, K. (Eds.). (2014). Carbon-Ion Radiotherapy: Principles, Practices, and Treatment Planning. Springer Japan. <https://doi.org/10.1007/978-4-431-54457-9>

- Uzawa, A., Ando, K., Koike, S., Furusawa, Y., Matsumoto, Y., Takai, N., Hirayama, R., Watanabe, M., Scholz, M., Elsässer, T., & Peschke, P. (2009). Comparison of Biological Effectiveness of Carbon-Ion Beams in Japan and Germany. *International Journal of Radiation Oncology\*Biology\*Physics*, 73(5), 1545–1551.  
<https://doi.org/10.1016/j.ijrobp.2008.12.021>
- Watabe, H., Yu, K. N., Safakatti, N., & Shahmohammadi Beni, M. (2023). Development of an open-source GUI computer program for modelling irradiation of multi-segmented phantoms using grid-based system for PHITS. *Nuclear Engineering and Technology*, 55(1), 373–377.  
<https://doi.org/10.1016/j.net.2022.08.033>
- Xie, X., Li, X., Tang, W., Xie, P., & Tan, X. (2022). Primary tumor location in lung cancer: The evaluation and administration. *Chinese Medical Journal*, 135(2), 127–136. <https://doi.org/10.1097/CM9.0000000000001802>
- Xiong, J., & Ruan, H. (2022). Value of carbon-ion radiotherapy for early stage non-small cell lung cancer. *Clinical and Translational Radiation Oncology*, 36, 16–23. <https://doi.org/10.1016/j.ctro.2022.06.005>
- Diakses pada 3 juni 2023, P. C. I. S. [Internet]. B. (MD): N. C. I. (US, *PDQ Adult Treatment Editorial Board. Non-Small Cell Lung Cancer Treatment (PDQ®): Patient Version*. Bethesda (MD): National Cancer Institute (US): PDQ Cancer Information Summaries [Internet]. Bethesda (MD): National Cancer Institute (US, 2021)