

## DAFTAR PUSTAKA

- [1] F. Bray, M. Laversanne, H. Sung, J. Ferlay, R. L. Siegel, I. Soerjomataram, and A. Jemal, "Global cancer statistics 2022: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries," *CA. Cancer J. Clin.*, vol. 74, no. 3, pp. 229–263, May 2024, doi: 10.3322/caac.21834.
- [2] "Cancer of the Lung and Bronchus - Cancer Stat Facts," SEER. Accessed: Aug. 06, 2023. [Online]. Available: <https://seer.cancer.gov/statfacts/html/lungb.html>
- [3] "Stage 2 Lung Cancer: Types, Symptoms & Diagnosis." Accessed: Aug. 06, 2023. [Online]. Available: <https://www.healthline.com/health/stage-2-lung-cancer#prevention>
- [4] "Non-Small Cell Lung Cancer Treatment (PDQ®) - NCI." Accessed: Aug. 06, 2023. [Online]. Available: <https://www.cancer.gov/types/lung/hp/non-small-cell-lung-treatment-pdq>
- [5] M. Beyzadeoglu, G. Ozyigit, and C. Ebruli, *Basic Radiation Oncology*. Cham: Springer International Publishing, 2022. doi: 10.1007/978-3-030-87308-0.
- [6] F. Siddiqui, S. Vaqar, and A. H. Siddiqui, "Lung Cancer," in *StatPearls*, Treasure Island (FL): StatPearls Publishing, 2023. Accessed: Aug. 06, 2023. [Online]. Available: <http://www.ncbi.nlm.nih.gov/books/NBK482357/>
- [7] ProTom, "The Bragg Peak," ProTom. Accessed: Aug. 06, 2023. [Online]. Available: <https://www.protominternational.com/2018/06/bragg-peak/>
- [8] K. Tsuboi, T. Sakae, and A. Gerelchuluun, Eds., *Proton Beam Radiotherapy: Physics and Biology*. Singapore: Springer Singapore, 2020. doi: 10.1007/978-981-13-7454-8.
- [9] K. Ohnishi, N. Nakamura, H. Harada, S. Tokumaru, H. Wada, T. Arimura, H. Iwata, Y. Sato, Y. Sekino, H. Tamamura, J. Mizoe, T. Ogino, H. Ishikawa, Y. Kikuchi, T. Okimoto, S. Murayama, T. Akimoto, and H. Sakurai, "Proton Beam Therapy for Histologically or Clinically Diagnosed Stage I Non-Small Cell Lung Cancer (NSCLC): The First Nationwide Retrospective Study in Japan," *Int. J. Radiat. Oncol.*, vol. 106, no. 1, pp. 82–89, Jan. 2020, doi: 10.1016/j.ijrobp.2019.09.013.
- [10] N. Nakamura, K. Hotta, S. Zenda, H. Baba, S. Kito, T. Akita, A. Motegi, H. Hojo, M. Nakamura, R. V. Parshuram, M. Okumura, and T. Akimoto, "Hypofractionated proton beam therapy for centrally located lung cancer," *J. Med. Imaging Radiat. Oncol.*, vol. 63, no. 4, pp. 552–556, Aug. 2019, doi: 10.1111/1754-9485.12901.
- [11] Q.-N. Nguyen, N. B. Ly, R. Komaki, L. B. Levy, D. R. Gomez, J. Y. Chang, P. K. Allen, R. J. Mehran, C. Lu, M. Gillin, Z. Liao, and J. D. Cox, "Long-term outcomes after proton therapy, with concurrent chemotherapy, for stage II–III inoperable non-small cell lung cancer," *Radiother. Oncol.*, vol. 115, no. 3, pp. 367–372, Jun. 2015, doi: 10.1016/j.radonc.2015.05.014.
- [12] T. Ono, T. Nakamura, H. Yamaguchi, Y. Azami, K. Takayama, M. Suzuki, H. Wada, Y. Kikuchi, M. Murakami, and K. Nemoto, "Clinical results of proton beam therapy for elderly patients with non-small cell lung cancer," *Radiat. Oncol.*, vol. 13, no. 1, p. 19, Dec. 2018, doi: 10.1186/s13014-018-0967-4.



- [13] T. Ohno, Y. Oshiro, M. Mizumoto, H. Numajiri, H. Ishikawa, T. Okumura, T. Terunuma, T. Sakae, and H. Sakurai, “Comparison of dose-volume histograms between proton beam and X-ray conformal radiotherapy for locally advanced non-small-cell lung cancer,” *J. Radiat. Res. (Tokyo)*, vol. 56, no. 1, pp. 128–133, Jan. 2015, doi: 10.1093/jrr/rru082.
- [14] S. Wei, H. Lin, J. Isabelle Choi, C. Shi, C. B. Simone, and M. Kang, “Advanced pencil beam scanning Bragg peak FLASH-RT delivery technique can enhance lung cancer planning treatment outcomes compared to conventional multiple-energy proton PBS techniques,” *Radiother. Oncol.*, vol. 175, pp. 238–247, Oct. 2022, doi: 10.1016/j.radonc.2022.08.005.
- [15] G. M. Cooper, “The Development and Causes of Cancer,” in *The Cell: A Molecular Approach. 2nd edition*, Sinauer Associates, 2000. Accessed: Aug. 11, 2023. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK9963/>
- [16] F. C. Detterbeck, D. J. Boffa, A. W. Kim, and L. T. Tanoue, “The Eighth Edition Lung Cancer Stage Classification,” *Chest*, vol. 151, no. 1, pp. 193–203, Jan. 2017, doi: 10.1016/j.chest.2016.10.010.
- [17] W. D. Newhauser and R. Zhang, “The physics of proton therapy,” *Phys. Med. Biol.*, vol. 60, no. 8, pp. R155–R209, Apr. 2015, doi: 10.1088/0031-9155/60/8/R155.
- [18] S. H. Park and J. O. Kang, “Basics of particle therapy I: physics,” *Radiat. Oncol. J.*, vol. 29, no. 3, p. 135, 2011, doi: 10.3857/roj.2011.29.3.135.
- [19] W. Demtröder, *Nuclear and Particle Physics*. in Undergraduate Lecture Notes in Physics. Cham: Springer International Publishing, 2022. doi: 10.1007/978-3-030-58313-2.
- [20] D. R. Grimes, D. R. Warren, and M. Partridge, “An approximate analytical solution of the Bethe equation for charged particles in the radiotherapeutic energy range,” *Sci. Rep.*, vol. 7, no. 1, p. 9781, Aug. 2017, doi: 10.1038/s41598-017-10554-0.
- [21] V. Grégoire and T. R. Mackie, “State of the art on dose prescription, reporting and recording in Intensity-Modulated Radiation Therapy (ICRU report No. 83),” *Cancer/Radiothérapie*, vol. 15, no. 6–7, pp. 555–559, Oct. 2011, doi: 10.1016/j.canrad.2011.04.003.
- [22] D. Jones, “ICRU Report 50—Prescribing, Recording and Reporting Photon Beam Therapy,” *Med. Phys.*, vol. 21, no. 6, pp. 833–834, Jun. 1994, doi: 10.1118/1.597396.
- [23] “Atlases for Organs at Risk (Oars) in Thoracic Radiation Therapy,” Docslib. Accessed: Aug. 18, 2023. [Online]. Available: <https://docslib.org/doc/11812486/atlas-for-organs-at-risk-oars-in-thoracic-radiation-therapy>
- [24] S. Bisello, S. Cilla, A. Benini, R. Cardano, N. P. Nguyen, F. Deodato, G. Macchia, M. Buwenge, S. Cammelli, T. Wondemagegnehu, A. F. M. K. Uddin, S. Rizzo, A. Bazzocchi, L. Strigari, and A. G. Morganti, “Dose–Volume Constraints fOr oRganS At risk In Radiotherapy (CORSAIR): An ‘All-in-One’ Multicenter–Multidisciplinary Practical Summary,” *Curr. Oncol.*, vol. 29, no. 10, pp. 7021–7050, Sep. 2022, doi: 10.3390/curroncol29100552.
- [25] “PNPKParu.pdf.”



- [26] “[https://www.jastro.or.jp/en/news/proton\\_guideline\\_jastro\\_7\\_13\\_2017-2\\_cmarkandwatermark.pdf](https://www.jastro.or.jp/en/news/proton_guideline_jastro_7_13_2017-2_cmarkandwatermark.pdf).” Accessed: Jul. 16, 2024. [Online]. Available: [https://www.jastro.or.jp/en/news/proton\\_guideline\\_jastro\\_7\\_13\\_2017-2\\_cmarkandwatermark.pdf](https://www.jastro.or.jp/en/news/proton_guideline_jastro_7_13_2017-2_cmarkandwatermark.pdf)
- [27] “Peraturan Kepala Badan Pengawas Tenaga Nuklir Nomor 3 Tahun 2013 tentang Keselamatan Radiasi Dalam Penggunaan Radioterapi”.
- [28] “Centrum Cyklotronowe Bronowice - For Medicine.” Accessed: Aug. 09, 2024. [Online]. Available: [https://ccb.ifj.edu.pl/en.dla\\_medycyny.html](https://ccb.ifj.edu.pl/en.dla_medycyny.html)
- [29] H. Paganetti, “Proton Beam Therapy,” in *Proton Beam Therapy*, IOP Publishing, 2017. doi: 10.1088/978-0-7503-1370-4ch1.
- [30] H. Murshed, “Radiation Physics, Dosimetry, and Treatment Planning,” in *Fundamentals of Radiation Oncology*, Elsevier, 2019, pp. 3–37. doi: 10.1016/B978-0-12-814128-1.00001-5.
- [31] V. Maradia, D. Meer, R. Dölling, D. C. Weber, A. J. Lomax, and S. Psoroulas, “Demonstration of momentum cooling to enhance the potential of cancer treatment with proton therapy,” *Nat. Phys.*, vol. 19, no. 10, pp. 1437–1444, Oct. 2023, doi: 10.1038/s41567-023-02115-2.
- [32] D. W. O. Rogers, “Monte Carlo Techniques in Radiotherapy,” 2002.
- [33] E. Amato, D. Lizio, and S. Baldari, “Applications of the Monte Carlo Method in Medical Physics”.
- [34] C. H. Kim, Y. S. Yeom, N. Petoussi-Henss, M. Zankl, W. E. Bolch, C. Lee, C. Choi, T. T. Nguyen, K. Eckerman, H. S. Kim, M. C. Han, R. Qiu, B. S. Chung, H. Han, and B. Shin, “ICRP Publication 145: Adult Mesh-Type Reference Computational Phantoms,” *Ann. ICRP*, vol. 49, no. 3, pp. 13–201, Oct. 2020, doi: 10.1177/0146645319893605.
- [35] T. Sato, Y. Iwamoto, S. Hashimoto, T. Ogawa, T. Furuta, S.-I. Abe, T. Kai, Y. Matsuya, N. Matsuda, Y. Hirata, T. Sekikawa, L. Yao, P.-E. Tsai, H. N. Ratliff, H. Iwase, Y. Sakaki, K. Sugihara, N. Shigyo, L. Sihver, and K. Niita, “Recent improvements of the particle and heavy ion transport code system – PHITS version 3.33,” *J. Nucl. Sci. Technol.*, vol. 61, no. 1, pp. 127–135, Jan. 2024, doi: 10.1080/00223131.2023.2275736.
- [36] Internationale Atomenergie-Organisation and International Commission on Radiation Units and Measurements, Eds., *Relative biological effectiveness in Ion Beam Therapy*. in Technical reports series / International Atomic Energy Agency, no. 461. Vienna: International Atomic Energy Agency, 2008.
- [37] D. J. Thomas, “ICRU report 85: fundamental quantities and units for ionizing radiation,” *Radiat. Prot. Dosimetry*, vol. 150, no. 4, pp. 550–552, Jul. 2012, doi: 10.1093/rpd/ncs077.

