



## DAFTAR PUSTAKA

- [1] R. W. Hamm and M. E. Hamm, *Industrial accelerators and their applications*. World Scientific, 2012. doi: 10.1142/7745.
- [2] S. V. Kutsaev, “Advanced technologies for applied particle accelerators and examples of their use,” *Technical Physics*, vol. 66, no. 2, pp. 161–195, Feb. 2021, doi: 10.1134/S1063784221020158.
- [3] P. A. Bystrov, Y. S. Pavlov, O. V. Souvorova, and I. Y. Yakupov, “Formation of irradiation beams on accelerator UELV-10-10- C-70 for research of the radiation resistance of polymers,” *Radiation Physics and Chemistry*, vol. 161, pp. 83–86, Aug. 2019, doi: 10.1016/j.radphyschem.2019.03.053.
- [4] S. V. Kutsaev, R. Agustsson, A. Arodzero, S. Boucher, A. Murokh, and A. Y. Smirnov, “Sub-MeV ultra-compact linac for radioactive isotope sources replacement, non-destructive testing, security and medical applications,” *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms*, vol. 459, Nov. 2019, doi: 10.1016/j.nimb.2019.08.029.
- [5] P. A. Bystrov et al., “Prospects of electron beam irradiation to ensure microbiological safety of food products,” *Physics of Atomic Nuclei*, vol. 81, no. 10, pp. 1526–1530, Dec. 2018, doi: 10.1134/S1063778818110054.
- [6] K. Hossain, Y. A. Maruthi, N. L. Das, K. P. Rawat, and K. S. S. Sarma, “Irradiation of wastewater with electron beam is a key to sustainable smart/green cities: a review,” *Applied Water Science*, vol. 8, no. 1, p. 6, Mar. 2018, doi: 10.1007/s13201-018-0645-6.
- [7] M. Shumail, V. A. Dolgashev, and C. Markusen, “Design of high efficiency high power Cw LINACs for environmental and industrial applications,” in *9th International Particle Accelerator Conference IPAC2018*, BC, Canada, 2018. doi: 10.18429/JACoW-IPAC2018-THPML126.
- [8] S. Kutsaev et al., “Electron accelerators for novel cargo inspection methods,” *Physics Procedia*, vol. 90, pp. 115–125, 2017, doi: 10.1016/j.phpro.2017.09.036.
- [9] P. Apiwattanakul and S. Rimjaem, “Electron beam dynamic study and Monte Carlo simulation of accelerator-based irradiation system for natural rubber vulcanization,” *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms*, vol. 466, pp. 69–75, Mar. 2020, doi: 10.1016/j.nimb.2020.01.012.
- [10] A. Y. Gracheva et al., “Enhancement of efficiency of storage and processing of food raw materials using radiation technologies,” *Physics of*





- Atomic Nuclei, vol. 79, no. 14, pp. 1682–1687, Dec. 2016, doi: 10.1134/S1063778816140118.
- [11] U. Gryczka, W. Migdał, and S. Bułka, “The effectiveness of the microbiological radiation decontamination process of agricultural products with the use of low energy electron beam,” *Radiation Physics and Chemistry*, vol. 143, pp. 59–62, Feb. 2018, doi: 10.1016/j.radphyschem.2017.09.020.
- [12] S. V. Kutsaev, R. Agustsson, A. Arodzero, S. Boucher, P. Burstein, and A. Y. Smirnov, “X-ray sources for adaptive radiography and computed tomography,” in *AIP Conference Proceedings*, 2019, p. 050014. doi: 10.1063/1.5127706.
- [13] V. I. Shvedunov et al., “Electron accelerators design and construction at Lomonosov Moscow State University,” *Radiation Physics and Chemistry*, vol. 159, pp. 95–100, Jun. 2019, doi: 10.1016/j.radphyschem.2019.02.044.
- [14] A. V. Smirnov, “On the self-oscillation in a pulsed RF amplifying–accelerating system,” *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, vol. 868, pp. 39–42, Oct. 2017, doi: 10.1016/j.nima.2017.06.033.
- [15] A. V. Smirnov et al., “RF design and beam tracking in a compact racetrack CW microtron boosted with a tabletop Rhodotron,” *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, vol. 953, p. 163160, Feb. 2020, doi: 10.1016/j.nima.2019.163160.
- [16] V. V. Paramonov, “Possible parameters of proton acceleration using backward traveling wave harmonic,” *Physics of Particles and Nuclei Letters*, vol. 13, no. 7, pp. 901–906, Dec. 2016, doi: 10.1134/S1547477116070414.
- [17] Taufik, K. Manasatitpong, E. Nuraini, and Darsono, “Design of 3 MeV electron linac prototype for irradiation research facility,” *Journal of Physics: Conference Series*, vol. 2945, no. 1, p. 012015, Jan. 2025, doi: 10.1088/1742-6596/2945/1/012015.
- [18] P.-W. Huang et al., “An ultrahigh-vacuum S-band photocathode radio-frequency electron gun,” *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, vol. 1051, p. 168251, Jun. 2023, doi: 10.1016/j.nima.2023.168251.
- [19] Y. Joo et al., “Development of new S-band RF window for stable high-power operation in linear accelerator RF system,” *Nuclear Instruments and Methods in Physics Research Section A: Accelerators,*





Spectrometers, Detectors and Associated Equipment, vol. 866, pp. 1–8, Sep. 2017, doi: 10.1016/j.nima.2017.05.031.

- [20] J. H. Jeong et al., “Development of high voltage power supply for the KSTAR 170 GHz ECH and CD system,” *Fusion Engineering and Design*, vol. 88, no. 5, pp. 380–387, Jun. 2013, doi: 10.1016/j.fusengdes.2013.03.078.
- [21] Buonomo, B., Di Giulio, C., & Foggetta, L. G., “The Frascati DAFNE LINAC modulator upgrade”, in *Proceedings of the 14th International Particle Accelerator Conference (IPAC 2022)*, Venice, Italy, 2022.
- [22] Pearce, P. D., “Pulsed power for future linear accelerators”, *IEE Colloquium (Digest)*, 1999, No. 30, 39–47.
- [23] Lim, H., Jeong, D. H., Lee, M., Lee, M., Yi, J., Yang, K., & Ro, S. C., “Design of a 6-MW solid-state pulse modulator using Marx generator for the medical linac”, *IEEE Transactions on Plasma Science*, 2017, 45(10), 2734–2738.
- [24] Sandeep Kumar, R., Thakur, K., & Krishnan, R., “Design of pulse power supply for klystron and its noise characterization”, *Power Research*, 2017, 13(1), 47–60.
- [25] Arismunandar, and Silakhuddin. 2002. “Struktur Dan Segi-Segi Keselamatan LINAC
- [26] M. Foley and J. Shea, “Medical linear accelerators,” in *Radiation Oncology Physics: A Handbook for Teachers and Students*, 2nd ed., E. B. Podgorsak, Ed. Vienna, Austria: IAEA, 2014.
- [27] S. Tenenbaum, “Medical linear accelerators,” in *Radiation Oncology Physics: A Handbook for Teachers and Students*, E. B. Podgorsak, Ed. Vienna, Austria: IAEA, 2003.
- [28] W. A. Toor, “Study and Simulations of Klystron Modulator Pulse Transformer”, *Master’s Thesis*, Capital University of Science and Technology, Islamabad, Pakistan, 2019.
- [29] RF Systems, *RF Systems for Accelerators*, CERN Accelerator School Lecture Notes, Geneva, Switzerland, 2010.
- [30] Kumar, R Sandeep, Kiran Thakur, and R Krishnan., “Design of Pulse Power Supply for Klystron and Its Noise Characterization.” *Central Power Research Institute* 13 (1 March 2017): 47–60.
- [31] Mohammadi Moghadam, Hooman, Kasra Ghobadi, and Asadollah Taghavi Kolaei., “Design and Simulation of Thyatron Switch Using for Pulse Forming Network”, Presented at the 4th National Conference on Applied





Research in Electrical and Computer Science and Medical Engineering,  
July 2020.

- [32] Jensen, C., and D. Qunell., “Thyratron Trigger with Low Jitter.” Proceedings of the IEEE Particle Accelerator Conference 1: 1281–83, 1998.
- [33] Pradana, S., Susanto, A., & Widyawan., “Pemanfaatan LTspice dan DesignSpark PCB untuk simulasi rangkaian dan perancangan PCB”, In Prosiding Seminar Ilmu Pengetahuan Teknik 2013: Teknologi untuk Mendukung Pembangunan Nasional (pp. 127–132).
- [34] Pirkel, W. *RF Systems for Linacs*. CERN, Geneva, Switzerland. (Technical report) - an overview of RF systems used in linear accelerators, 1994.
- [35] Pichoff, Nicolas., “Introduction to RF Linear Accelerators (LINACS).” CAS-CERN Accelerator School: 105–28, 1994.
- [36] Adquisiciones, L E Y D E et al. 2019. “No 主観的健康感を中心とした在宅高齢者における健康関連指標に関する共分散構造分析 Title.” Duke Law Journal 1(1).
- [37] Gupta, D. (Content Writer), & S. N. Medical College, Jodhpur (Raj.). (circa 2023). Module 29: Linear Accelerator in Cancer Treatment. PG Pathshala – Biophysics, Paper 06: Radiation Biophysics.
- [38] Huang, C. et al., “Development of a Modulator Pulse Stability Measurement Device and Test Results at SLAC.” Digest of Technical Papers-IEEE International Pulsed Power Conference (December): 1526–29, 2011.
- [39] Akemoto, M, S Gold, A Krasnykh, and R Koontz., “DESIGN OF A PFN FOR THE NLC KLYSTRON PULSE MODULATOR \* Abstract A Pulse-Forming Network ( PFN ) with Mutual Coupling Has Been Designed and Built for the Klystron Pulse Modulator of the SLAC Next Linear Collider ( NLC ). The PFN Consists of a SingleLayer .” (June): 3–6, 1998.
- [40] Theodoridis, Theodoros, or Juergen Kraemer. According to bibliographic records, this study was written by 岡戸 順 - (Junichi Okado) and colleagues and published in 2003 in the journal 総合都市研究 (Comprehensive Urban Studies), Vol. 81, pp. 19–30.
- [41] Burkhart, Craig, and Mark Kemp., “Pulsed Power Engineering Basic Topologies.” SLAC National Accelerator Laboratory, 2011.
- [42] Carleto, N., and C. C. Motta., “Design, Construction and Characterization of a LineType Pulse Modulator for Driving High Power Magnetron.” SBMO/IEEE MTT-S International Microwave and Optoelectronics Conference Proceedings (August 2005): 330–33.





- [43] Eckoldt, H. J. 2018. "Long Pulse Modulators." CERN Accelerator School: Power Converters, CAS 2014 - Proceedings (April): 217–44.
- [44] Toor, Waqas Ahmed., "CAPITAL UNIVERSITY OF SCIENCE AND Study and Simulations of Klystron Modulator Pulse Transformer By, 2019.
- [45] P. Wang et al., "Development of an S-band spherical pulse compressor," Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, vol. 901, Sep. 2018, doi: 10.1016/j.nima.2018.05.070.
- [46] G. Ciovati et al., "Design of a cw, low-energy, high-power superconducting linac for environmental applications," Physical Review Accelerators and Beams, vol. 21, 2018, doi: 10.1103/PhysRevAccelBeams.21.09160.
- [47] T. Onchi et al., "High voltage electrical system of 8.56 GHz CW klystron for electron cyclotron heating on QUEST spherical tokamak," Fusion Engineering and Design, vol. 146, pp. 2567–2570, Sep. 2019, doi: 10.1016/j.fusengdes.2019.04.043.
- [48] D. Cucè et al., "Command and control system for the STAR X-ray source," Fusion Engineering and Design, vol. 146, pp. 1947–1953, Sep. 2019, doi: 10.1016/j.fusengdes.2019.03.073.
- [49] N. Shafqat et al., "Fabrication, conditioning and installation of the 1st high gradient S-band accelerating module for the energy upgrade of the FERMI free electron laser LINAC," Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, vol. 1055, p. 168543, Oct. 2023, doi: 10.1016/j.nima.2023.168543.
- [50] W. E. Cox, "Design and implementation of a Rayleigh pulse forming network for automated control," Texas Tech University, 2019.
- [51] J. Perez et al., "High current pulse forming network switched by static induction thyristor," Matter and Radiation at Extremes, vol. 3, no. 5, pp. 261–266, Sep. 2018, doi: 10.1016/j.mre.2018.04.001.
- [52] Y. D. Korolev et al., "Specifics of operation of a cold-cathode thyratron with a backward voltage half-wave," Technical Physics, vol. 62, no. 5, pp. 708–715, May 2017, doi: 10.1134/S1063784217050140.
- [53] A. S. Yudin and S. M. Martemyanov, "Self-triggering circuit for a pulse thyratron switch in a pulse voltage generator," Russian Physics Journal, vol. 65, no. 11, pp. 1989–1995, Mar. 2023, doi: 10.1007/s11182-023-02860-0.
- [54] A. Poloskov et al., "Submicrosecond electron accelerator based on pulsed transformer," Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated





- Equipment, vol. 969, p. 163951, Jul. 2020, doi: 10.1016/j.nima.2020.163951.
- [55] U. Thaker et al., “Design, analysis, fabrication and testing of 100 kV, 100 mA DC full-wave voltage multiplier (FWVM) modular unit for accelerator power supply,” *Fusion Engineering and Design*, vol. 192, p. 113612, Jul. 2023, doi: 10.1016/j.fusengdes.2023.113612.
- [56] F. Song, F. Li, B. Zhang, H. Gong, Y. Gan, and X. Jin, “A compact low jitter high power repetitive long-pulse relativistic electron beam source,” *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, vol. 919, pp. 56–63, Mar. 2019, doi: 10.1016/j.nima.2018.11.130.
- [57] D. S. Kim, B. K. Lee, S. S. Park, B. H. Choi, and S. H. Lee, “High-capacity capacitor charging power supply for a pulse modulator,” *Journal of the Korean Physical Society*, vol. 76, no. 7, pp. 547–550, Apr. 2020, doi: 10.3938/jkps.76.547.
- [58] A. Tokuchi et al., “Development of a high-power solid-state switch using static induction thyristors for a klystron modulator,” *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, vol. 769, pp. 72–78, Jan. 2015, doi: 10.1016/j.nima.2014.09.063.
- [59] A. Nause et al., “6 MeV novel hybrid (standing wave - traveling wave) photo-cathode electron gun for a THz superradiant FEL,” *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, vol. 1010, p. 165547, Sep. 2021, doi: 10.1016/j.nima.2021.165547.
- [60] J.-S. Oh et al., “Final design of the Korean AC/DC converters for the ITER coil power supply system,” *Fusion Engineering and Design*, vol. 98–99, pp. 1127–1130, Oct. 2015, doi: 10.1016/j.fusengdes.2015.06.147.
- [61] D. Purohit et al., “Studies on thermal simulation of PFN capacitors of pulsed klystron modulator for 10 meV 10 kW industrial LINAC,” in *High Voltage–Energy Storage Capacitors and Their Applications*, Springer, Singapore, 2024, pp. 71–77. doi: 10.1007/978-981-97-0337-1\_8.
- [62] Z. Mu et al., “*The design, experiment investigation, and experience of 324 MHz/3 MW klystron power source system for CSNS Linac*,” *AIP Advances*, vol. 15, no. 4, p. 045204, Apr. 2025, doi: 10.1063/5.0258642.

