

Bibliography

- [1] David Griffiths. “Introduction to Elementary Particles”. John Wiley and Sons (1987).
- [2] K. Higawara *et al.* “Particle Physics Booklet”. The Particle Data Group (July 2002).
<http://pdg.lbl.gov/>
- [3] Michael Peskin. “Physics at e^+e^- Linear Colliders” (14-23 May 2002). Lecture given to SLAC Young Particle Physicists group. <http://www-project.slac.stanford.edu/ypp/meetings/lectureseries0502/lectureseries0502.html>
- [4] Douglas Ross. “The Standard Model”. In “Proceedings of the School for Young High Energy Physicists”, pages 74–144. CLRC (2001). RAL-TR-2001-016.
- [5] F. Richard, J. R. Schneider, D. Trines & A. Wagner (editors). “TESLA Technical Design Report Part I: Executive Summary”. The TESLA Collaboration (March 2001).
http://tesla.desy.de/new_pages/TDR_CD/PartI/exec.html
- [6] S. Kuhlman *et al.* “Physics and Technology of the Next Linear Collider”. A Report Submitted to Snowmass ’96 (June 1996). SLAC-R-0485. <http://arxiv.org/pdf/hep-ex/9605011>
- [7] The American Linear Collider Working Group. “Linear Collider Physics Resource Book for Snowmass 2001” (June 2001). SLAC-R-0570. <http://www.slac.stanford.edu/pubs/slacreports/slac-r-570.html>
- [8] J. Rees. “Colliders”. In “Handbook of Accelerator Physics and Engineering”, pages 11–13. World Scientific (1999).
- [9] R. D. Heuer, D. Miller, F. Richard & P. Zerwas (editors). “TESLA Technical Design Report Part III: Physics at an e^+e^- Linear Collider”. The TESLA Collaboration (March 2001). http://tesla.desy.de/new_pages/TDR_CD/PartIII/physic.html
- [10] The Neutrino Factory/Muon Collider Collaboration. “Neutrino Factory and Muon Collider Feasability Studies” (2002). http://www.fnal.gov/projects/muon_collider/
- [11] CERN PhotoLab. “Overall view of the LHC experiments” (June 1999). CERN photo number: CERN-AC-9906026. http://doc.cern.ch/archive/electronic/cern/others/PHO/photo-ac/9906026_01.jpeg
- [12] E. J. N. Wilson. “Synchrotrons and Storage Rings”. In “Handbook of Accelerator Physics and Engineering”, pages 42–44. World Scientific (1999).

- [13] The NLC Collaboration. “2001 Report on the Next Linear Collider”. A Report Submitted to Snowmass 2001 (June 2001). SLAC-R-0571. <http://www.slac.stanford.edu/pubs/slacreports/slac-r-571.html>
- [14] R. P. Walker. “Synchrotron Radiation”. In “Fifth General Accelerator Physics Course Vol. I”, pages 437–459. CERN Accelerator School (1994). CERN-94-01. <http://preprints.cern.ch/yellowrep/1994/94-01/p437.pdf>
- [15] H. Wiedemann. “Radiation of a Point Charge”. In “Handbook of Accelerator Physics and Engineering”, pages 181–182. World Scientific (1999).
- [16] M. A. Furman & M. S. Zisman. “Luminosity”. In “Handbook of Accelerator Physics and Engineering”, pages 247–250. World Scientific (1999).
- [17] N. Phinney. “SLC Final Performance and Lessons”. In “Proceedings of the 20th International Linac Conference (LINAC 2000), Monterey, California”, pages 1–5 (21-25 August 2000). SLAC-PUB-8556. <http://www.slac.stanford.edu/econf/C000821/M0102.pdf>
- [18] The NLC Design Group. “Zeroth-Order Design Report for the Next Linear Collider” (May 1996). SLAC-R-0474. <http://www.slac.stanford.edu/pubs/slacreports/slac-r-474.html>
- [19] The TESLA Collaboration. “TESLA: the international linear collider and X-ray laser project” (2003). <http://tesla.desy.de/>
- [20] The JLC Collaboration. “JLC: Electron-Positron Linear Collider Project” (2003). <http://www-jlc.kek.jp/>
- [21] CERN. “The Compact Linear Collider Study” (2003). <http://ps-div.web.cern.ch/ps-div/CLIC/Welcome.html>
- [22] R. Brinkmann, K. Flöttmann, J. Roßbach, P. Schmüser, N. Walker & H. Weise (editors). “TESLA Technical Design Report Part II: The Accelerator”. The TESLA Collaboration (March 2001). http://tesla.desy.de/new_pages/TDR_CD/PartII/accel.html
- [23] A. D. Yeremian & R. H. Miller. “Electron Guns and Preinjectors”. In “Handbook of Accelerator Physics and Engineering”, pages 419–422. World Scientific (1999).
- [24] H. G. Kirk, R. Miller & D. Yeremian. “Electron Guns and Pre-Injectors”. In “Handbook of Accelerator Physics and Engineering”, pages 99–103. World Scientific (1999).
- [25] Simon Baird. “Accelerators for Pedestrians” (1998). Lecture course given for CERN PS Division. <http://ps.web.cern.ch/ps/training/pedestrians/>
- [26] R. P. Walker. “Wigglers”. In “Fifth Advanced Accelerator Physics Course Vol. II”, pages 807–835. CERN Accelerator School (1995). CERN-95-06. <http://preprints.cern.ch/yellowrep/1995/95-06/p807.pdf>

- [27] Marc Ross. “Review of Damping Ring design issues”. In “Proceedings of the 2003 Damping Ring workshop”, Daresbury Laboratory (27-29 January 2003). http://www.astec.ac.uk/conf/dampingring/proceedings/ross_drreview.pdf
- [28] A. Drozhdin *et al.* “Comparison of the TESLA, NLC and CLIC Beam-Collimation System Performance”. LCC-0111, Linear Collider Collaboration Tech Notes (March 2003). <http://www-project.slac.stanford.edu/lc/ilc/TechNotes/LCCNotes/PDF/lcc-0111.pdf>
- [29] T. O. Raubenheimer & F. Zimmermann. “Operation of Final Focus Systems in Linear Colliders”. In “Handbook of Accelerator Physics and Engineering”, pages 257–263. World Scientific (1999).
- [30] Josef Frisch. Private Communication.
- [31] J. Roßbach & P. Schmüser. “Basic Course on Accelerator Optics”. In “Fifth General Accelerator Physics Course Vol. I”, pages 17–88. CERN Accelerator School (1994). CERN-94-01. <http://preprints.cern.ch/yellowrep/1994/94-01/p17.tif>
- [32] D. A. Edwards & M. Syphers. “Linear Betatron Motion”. In “Handbook of Accelerator Physics and Engineering”, pages 49–50. World Scientific (1999).
- [33] K. Brown. “Single Element Optics”. In “Handbook of Accelerator Physics and Engineering”, pages 55–59. World Scientific (1999).
- [34] Oliver Bruening. “Maps”. CERN Accelerator School (15-26 October 2001). Lecture given at Intermediate Accelerator Physics Course, Seville, Spain. <http://bruening.home.cern.ch/bruening/CAS/maps.pdf>
- [35] S. Guiducci. “Chromaticity”. In “Fifth General Accelerator Physics Course Vol. I”, pages 191–206. CERN Accelerator School (1994). CERN-94-01. <http://preprints.cern.ch/yellowrep/1994/94-01/p191.pdf>
- [36] F. Zimmermann. “Beam Delivery”. Lecture Notes for “Accelerator Physics and Technologies for Linear Colliders”, Univ. of Chicago, Physics 575 (Feb. 2002). http://hep.uchicago.edu/~kwangje/LectureNotes_Zimmermann.pdf
- [37] P. Raimondi & A. Seryi. “A Novel Final Focus Design for High Energy Linear Colliders”. In “Proceedings of the 7th European Particle Accelerator Conference (EPAC 2000), Vienna, Austria”, pages 492–494. CERN (26-30 June 2000). <http://accelconf.web.cern.ch/AccelConf/e00/PAPERS/THP6A11.pdf>
- [38] J. Le Duff. “Dynamics and Acceleration in Linear Structures”. In “Fifth General Accelerator Physics Course Vol. I”, pages 253–288. CERN Accelerator School (1994). CERN-94-01. <http://preprints.cern.ch/yellowrep/1994/94-01/p253.pdf>
- [39] Stanley Humphries. “Principles of Charged Particle Acceleration”. John Wiley and Sons (1986). <http://www.eece.unm.edu/faculty/humphrie/cpa/cpa.htm>

- [40] Keith Jobe. “NLCTA Photo scrapbook – Accelerator structure installations” (7/9 May 2001). <http://www.slac.stanford.edu/accel/nlc/local/Projects/NLCTA/pictures/accelerator/>
- [41] B. I. Bleaney & B. Bleaney. “Electricity and Magnetism”. Oxford University Press, 2nd edition (1965).
- [42] R. H. Miller *et al.* “Room Temperature Accelerator Structures for Linear Colliders”. In “Proceedings of the 2001 Particle Accelerator Conference, Chicago, Vol. 5”, pages 3819–3821. FermiLab (18-22 June 2001). <http://accelconf.web.cern.ch/AccelConf/p01/PAPERS/FPAH062.PDF>
- [43] Colin Perry. Private Communication.
- [44] G. Caryotakis. “The Klystron: A Microwave Source of Surprising Range and Endurance”. Invited review paper for The American Physical Society, Division of Plasma Physics Conference in Pittsburgh, PA (18 Nov. 1997). SLAC-PUB-7731. <http://www.slac.stanford.edu/cgi-wrap/getdoc/slac-pub-7731.pdf>
- [45] H. D. Schwarz & M. Tigner. “Amplifier Systems”. In “Handbook of Accelerator Physics and Engineering”, pages 507–510. World Scientific (1999).
- [46] K. Yokoya & P. Chen. “Beam-beam Phenomena in Linear Colliders”. In “Proceedings of the US-CERN School on Particle Accelerators – *Frontiers of Particle Beams: Energy Limitations*”, pages 415–445. Springer Verlag (7-14 Nov. 1990). KEK Preprint 91-2. http://www-sldnt.slac.stanford.edu/nlc/publications/beam-beam_Yokoya_Chen.ps
- [47] Tom Markiewicz. “Interaction Region Issues at a Linear Collider”. Part of Linear Collider Line Drive series of talks given at Fermilab (1 Mar. 2001). <http://www-lc.fnal.gov/Linedrive/talks/TomMarkiewicz.pdf>
- [48] P. Chen. “Beam-Beam Effects in Linear Colliders”. In “Handbook of Accelerator Physics and Engineering”, pages 140–144. World Scientific (1999).
- [49] Tor Raubenheimer. “Accelerator Physics Issues in Linear Colliders”. Lecture given to Graduate Student Association of Fermilab as part of Linear Collider Lecture Series (25-28 March 2002). http://www.fnal.gov/orgs/gsa/classes/linear_colliders_02/Raubenheimer-1.pdf
- [50] N. Solyak. “NLC/JLC and TESLA Overview”. Talk given for Linear Collider R&D Group at Fermilab (30 May 2002). http://www.hep.uiuc.edu/LCRD/pdf_docs/biweeklies_05_30_02_solyak.pdf
- [51] F. Zimmermann *et al.* “Performance of the SLC 1994/95 SLC Final Focus System”. In “Proceedings of the 16th IEEE Particle Accelerator Conference, Dallas, Texas”, pages 656–658 (1-5 May 1995). <http://accelconf.web.cern.ch/AccelConf/p95/ARTICLES/RPB/RPB01.PDF>

- [52] Courtesy of Glen White.
- [53] L. Hendrickson *et al.* “Feedback Systems for Linear Colliders”. In “Proceedings of the 1999 Particle Accelerator Conference, New York: Vol 1”, pages 338–342 (29 Mar - 2 Apr 1999). SLAC-PUB-8055. <http://www.slac.stanford.edu/cgi-wrap/getdoc/slac-pub-8055.pdf>
- [54] J. Frisch. “IP Stabilisation for the NLC”. In “Proceedings of the 9th International Workshop on Linear Colliders (LC02), SLAC, CA”, (4-8 Feb 2002). SLAC-WP-21. http://www-conf.slac.stanford.edu/lc02/wg3/WG3-4_Frisch.pdf
- [55] I. Reyzl. “Stabilization of Beam Interaction in the TESLA Linear Collider”. In “Proceedings of the 7th European Particle Accelerator Conference (EPAC 2000), Vienna, Austria”, pages 315–317. CERN (26-30 June 2000). <http://accelconf.web.cern.ch/accelconf/e00/PAPERS/WEOAF203.pdf>
- [56] Steve Smith. Private Communication.
- [57] Daniel Schulte. “Simulations of an Intrapulse Interaction Point Feedback for the NLC”. LCC-0026, Linear Collider Collaboration Tech Notes (Sept. 1999). <http://www-project.slac.stanford.edu/lc/ilc/TechNotes/LCCNotes/PDF/lcc-0026.pdf>
- [58] Steve Smith. “Design of an NLC Intra-Pulse Feedback”. LCC-0056, Linear Collider Collaboration Tech Notes (March 2001). <http://www-project.slac.stanford.edu/lc/ilc/TechNotes/LCCNotes/PDF/lcc-0056.pdf>
- [59] Glen White. Private Communication.
- [60] Courtesy of Steve Smith.
- [61] R. E. Shafer. “Beam Position Monitoring”. In “Accelerator Instrumentation, Upton 1989”, pages 26–58. Amer. Inst. Phys. (1989). Prepared for The Physics of Particle Accelerators, Upton, NY, 1989.
- [62] P. Horowitz & W. Hill. “The Art of Electronics”. Cambridge University Press, 2nd edition (1989).
- [63] Bert C. Henderson. “Mixers: Theory And Technology”. RF and Microwave Designers Handbook (1997-98). The Watkins-Johnson Company.
- [64] Novak Electronics. “The Schottky Diode” (2002). http://www.teamnovak.com/Tech_info/more_info/SCHOTTKY.HTM
- [65] Vadim Manassewitsch. “Frequency Synthesizers — Theory and Design”. John Wiley and Sons (1976).
- [66] Pulsar Microwave Corporation. “Mixers” (2002). <http://www.pulsarmicrowave.com/products/mixers/mixers.htm>

- [67] Steve Smith & Simon Jolly. “BPM Processor Electronics Tests” (April 2001). FONT internal note.
- [68] Glen White. “Simulation Studies - NLC/JLC & CLIC” (2001).
<http://webnt.physics.ox.ac.uk/font/Simulation-NLC.htm>
- [69] R. A. McDunn & H. Quinn. “SLAC Virtual Visitors Center” (2002).
<http://www2.slac.stanford.edu/vvc/>
- [70] Peter Tenenbaum. “Collimator Wakefield Experiment”. Talk given at NLC Beam Delivery Meeting (14th Sept. 1998). <http://www-sldnt.slac.stanford.edu/nlc/Meetings/beamdelivery/1998-09-14-Tenenbaum/index.htm>
- [71] Peter Tenenbaum. “Collimator Wakefield Calculations for ILC-TRC Report”. LCC-0101, Linear Collider Collaboration Tech Notes (10th Sept. 2002).
http://www.slac.stanford.edu/~quarkpt/collwake_calcs.pdf
- [72] Information courtesy of Mike Woods.
- [73] SLAC Mechanical Design Document Control. Drawing ID AD-238-000-02.
<http://www.slac.stanford.edu/grp/md/dcon/draw/draw.html>
- [74] R. Carr *et al.* “A Precision measurement of the weak mixing angle in Møller scattering” (1997). SLAC-PROPOSAL-E-158. <http://www.slac.stanford.edu/exp/e158/documents/proposal.ps.gz>
- [75] The NLC Collaboration. “Next Linear Collider Test Accelerator Conceptual Design Report” (Aug. 1993). SLAC-R-411. <http://www.slac.stanford.edu/pubs/slacreports/slac-r-411.html>
- [76] SLAC Mechanical Design Document Control. Drawing ID GP-290-004-04.
<http://www.slac.stanford.edu/grp/md/dcon/draw/draw.html>
- [77] Information courtesy of Mark Ross and Chris Adolphsen.
- [78] M. Wendt. “BPM Instrumentation: A Short Introduction for Non-Experts” (September 2000). Introductory talk given at DESY lab.
- [79] Stephen R. Smith. “Beam Position Monitor Engineering”. In “Proceedings of the 7th Beam Instrumentation Workshop (BIW 96), Argonne, IL”, pages 50–65. Amer. Inst. Phys. (6-9 May 1996). SLAC-PUB-7244. <http://www.slac.stanford.edu/cgi-wrap/getdoc/slac-pub-7244.pdf>
- [80] J. A. Hinkson. “Beam Position Monitors”. In “Handbook of Accelerator Physics and Engineering”, pages 555–557. World Scientific (1999).
- [81] M. Wendt. “BPM Read-out Electronics Based on the Broadband AM/PM Normalisation Scheme”. In “Proceedings of the 5th European Workshop on Diagnostics and Beam Instrumentation for Particle Accelerators”, (2001). Grenoble, France, May 2001. <http://www.esrf.fr/conferences/DIPAC/Proceedings/stampedpdfs/CT-01.pdf>

- [82] G. Vismara. “The Comparison of Signal Processing Systems for Beam Position Monitors”. In “Proceedings of the 4th European Workshop on Diagnostics and Beam Instrumentation for Particle Accelerators”, pages 20–27 (1999). Chester, UK, May 1999. <http://srs.dl.ac.uk/dipac/proceedings.pdf>
- [83] Peter Tenenbaum. Private Communication.
- [84] SLAC Mechanical Design Document Control. Drawing ID SA-290-161-08. <http://www.slac.stanford.edu/grp/md/dcon/draw/draw.html>
- [85] R. Lorenz. “Cavity Beam Position Monitors”. In “Proceedings of the 8th Beam Instrumentation Workshop (BIW 98), Stanford, CA”, pages 53–73 (4-7 May 1998). <http://www.slac.stanford.edu/pubs/confproc/biw98/lorenz1.pdf>
- [86] Chris Adolphsen. Private Communication.
- [87] J. Arthur *et al.* “Linac Coherent Light Source (LCLS) Design Study Report” (April 1998). SLAC-R-521. <http://www.slac.stanford.edu/pubs/slacreports/slac-r-521.html>
- [88] Kimball Physics. “Spherical Cube Multi-CF Fitting” (2001). <http://www.kimballphysics.com/pdf/old-2-99/components-2-99/mcfspfcubes.pdf>
- [89] Kurt J. Lesker Company. “SMA Feedthrough with CF Flange, Single-Ended” (2002). http://www.lesker.com/cfdocs/newweb/Feedthroughs/Electrical_Feedthroughs/Instrument_Feedthroughs/SMA_SingleEnd_CFFlange.cfm
- [90] M. Tigner. “Common Transmission Lines and Cavities”. In “Handbook of Accelerator Physics and Engineering”, pages 368–374. World Scientific (1999).
- [91] Agilent Technologies. “Agilent 8719ES/20ES/22ES Network Analyzers User’s Guide” (2002). Model No.: 8719ES. <http://cp.literature.agilent.com/litweb/pdf/08720-90392.pdf>
- [92] Keith Jobe & Doug McCormick. Private Communication.
- [93] Pulsar Microwave Corporation. “Mixers - High Frequency - Connectorized Packages” (2002). http://www.pulsarmicrowave.com/products/mixers/high_freq_cn.htm
- [94] Institute for Semiconductor & Solid State Physics (Johannes Kepler University). “The Gunn Effect” (2001). http://www2.hlphys.uni-linz.ac.at/mmm/uebungen/gunn_web/gunn_effect.htm
- [95] J. C. G. Lesurf. “Negative Resistance Oscillators”. In “The Scots Guide to Electronics” (2002). http://www.st-andrews.ac.uk/~www_pa/Scots_Guide/RadCom/part5/page1.html
- [96] Microwave Device Technologies. “MDT Catalog 2002”. http://www.mdtcorp.com/2002_MDT_Catalog.pdf

- [97] H. Koziol. “Beam Diagnostics”. In “Fifth General Accelerator Physics Course Vol. II”, pages 565–600. CERN Accelerator School (1994). CERN-94-01. <http://preprints.cern.ch/yellowrep/1994/94-01/p565.pdf>
- [98] Chris Nantista & Chris Adolphsen. “Beam Current Diagnostics”. NLCTA-Note #47 (12th May 1995). http://www-project.slac.stanford.edu/lc/local/Projects/NLCTA/notes/_note_47.doc
- [99] Matlab Function Reference. “Error Functions”. Matlab Help Documentation (2002). <http://www.mathworks.com/access/helpdesk/help/techdoc/ref/erf.shtml>
- [100] Gavin Nesom. “BPM Ringing” (May 2002). FONT internal note.
- [101] Pulsar Microwave. “Stripline Power Dividers - 2-way” (2002). P/N: PS2-16-450/8S. http://www.pulsarmicrowave.com/products/power_dividers/2-way_stripline.htm
- [102] Weinschel Corporation. “Coaxial Phase Shifters” (2002). Model No.: 980-4. <http://www.weinschel.com/pdf files/wmod980.pdf>
- [103] Nova Microwave. “Connectorized Isolator (SMA Female)” (2002). Model No.: 1070IES. <http://www.novamicro.com/products/isolatorsmafemal.html>
- [104] Courtesy of William Palmer, Custom and Wireless. <http://www.cw-sales.com/>
- [105] Pulsar Microwave. “Stripline Power Dividers - 4-way” (2002). P/N: PS4-12-452/7S. http://www.pulsarmicrowave.com/products/power_dividers/4-way_stripline.htm
- [106] NLCTA MAD deck courtesy of Mark Woodley.
- [107] SLAC Mechanical Design Document Control. Drawing ID SA-238-004-18. <http://www.slac.stanford.edu/grp/md/dcon/draw/draw.html>
- [108] Power supply stability ranges courtesy of Dave McNair.
- [109] Field strength measurements courtesy of Dave Jensen.
- [110] C. R. Nave. “Hysteresis in Magnetic Materials” (2002). In “Hyperphysics - Physics of the Solid State”. <http://hyperphysics.phy-astr.gsu.edu/hbase/solids/hyst.html>
- [111] SLAC Mechanical Design Document Control. Drawing ID SA-446-540-14. <http://www.slac.stanford.edu/grp/md/dcon/draw/draw.html>
- [112] SLAC Mechanical Design Document Control. Drawing ID SA-446-542-55. <http://www.slac.stanford.edu/grp/md/dcon/draw/draw.html>
- [113] Marc Ross. Private Communication.

- [114] Analog Devices. “250 MHz, Voltage Output 4-Quadrant Multiplier” (1994). Model No.: AD835AN. http://www.analog.com/UploadedFiles/Data_Sheets/638150553ad835.pdf
- [115] Analog Devices. “800 MHz, 50 mW Current Feedback Amplifier” (1999). Model No.: AD8001AN. http://www.analog.com/UploadedFiles/Data_Sheets/295341559AD8001_c.pdf
- [116] Micrel Semiconductor. “MIC29300 High-Current Low-Dropout Regulators” (1998). Model No.: MIC29300-5.0BT. http://www.micrel.com/_PDF/mic29150.pdf
- [117] National Semiconductor. “LM2990 Negative Low Dropout Regulator” (1999). Model No.: LM2990T-5.0. <http://www.national.com/ds/LM/LM2990.pdf>
- [118] Tektronix. “Digital Storage Oscilloscopes” (2002). Model No.: TDS684C. http://www.tek.com/Measurement/Products/catalog/tds684c/eng/55W_10066_9.pdf
- [119] Agilent Technologies. “Agilent E36XX-Series Manual DC Power Supplies” (2002). Model No.: E3630A. <http://cp.literature.agilent.com/litweb/pdf/5959-5329.pdf>
- [120] Agilent Technologies. “Agilent 33250A 80 MHz Function/Arbitrary Waveform Generator” (2001). Model No.: 33250A. <http://cp.literature.agilent.com/litweb/pdf/33250-90001.pdf>
- [121] Josef Frisch, Colin Perry & Phil Burrows. Private Communication.
- [122] Integrated Publishing. “Planar Tubes” (2002). In “Introduction to Electronic Emission, Tubes and Power”. <http://www.tpub.com/neets/book6/21c.htm>
- [123] D. R. Hamilton, J. K. Knipp & J. B. Horner Kuper. “Klystrons and Microwave Triodes”, volume 6 of *MIT Radiation Laboratory Series*. McGraw-Hill, 1st edition (1948).
- [124] Eimac (Communications & Power Industries). “8941/Y690 Planar Triode Technical Data” (1985). <http://catalog.rell.com/relecom/Images/Objects/2500/2480.PDF>
- [125] Stanford Research Systems. “30 MHz Synthesized Function and Arbitrary Waveform Generator” (1999). Model: DS345. <ftp://ftp.thinksrs.com/PDFs/Manuals/DS345m.pdf>