Publications of the IRS Group
Institute for National Measurement Standards
National Research Council of Canada

Ottawa, K1A-OR6

This list is not exhaustive, especially for the papers prior to 1984, but does list all IRS papers related to dosimetry from the IRS bibtex data base. Maintained by Iwan Kawrakow

Last updated January 10, 2005

1 Refereed Publications

1. W. R. Dixon, F. Fish, and A. Morrison, **Preliminary Depth Dose and Isodose Measurements for Cobalt-60 Teletherapy Unit**, J of Canadian Association of Radiologists **2**, 12 – 13 (1951).

2. H. E. Johns, L. M. Bates, E. R. Epp, D. V. Cormack, S. O. Fedoruk, A. Morrison, W. R. Dixon, and C. Garrett, **1000-Curie Cobalt-60 Units for Radiation Therapy**, Nature **168**, 1035 (1951).

3. W. R. Dixon, **Build-up Factors for Transmission of ^{60}Co Gamma-rays through Concrete and Lead**, Physical Review **85**, 498 – 499 (1952).

4. W. R. Dixon, **Radiation Measurements with the Eldorado ^{60}Co Teletherapy Unit**, British Journal of Radiology **25**, 294 (1952).

5. J. Kastner and L. Greenberg, **Measurement of Beta-Ray Applicators**, Radiology **58**, 731 – 739 (1952).

6. J. Kastner and G. N. Whyte, **The Half-Life of ^{60}Co**, Physical Review **91**, 332 (1953).

7. C. Garrett and G. N. Whyte, **Build-up measurements on Cobalt-60 gamma radiation in iron and lead**, Physical Review **95**, 889 – 891 (1954).

8. W. S. Michel and C. N. Whyte, **International Comparisons of the Canadian Primary Radium Standard**, Canadian Journal of Physics **33**, 521 – 528 (1955).

9. G. N. Whyte, **Measurements of Spectral and Angular Distributions of Secondary Gamma-rays in Matter**, Canadian Journal of Physics **33**, 96 – 109 (1955).

10. G. N. Whyte, **Measurement of the Bragg-Gray Stopping Power Correction**, Radiation Res. **6**, 371 – 379 (1957).

11. J. H. Aitken, **An Analysis of the Free-Air Ionization Chamber for Extended Sources of Radiation**, Phys. Med. Biol. **3**, 27 – 36 (1958).

12. A. J. D. Szilvasi and G. N. Whyte, **The Energy Response of a Victoreen Condenser Ionization Chamber**, Phys. Med. Biol. **3**, 207 – 211 (1959).

13. K. W. Geiger, **The Status of the Canadian Neutron Standard**, Canadian Journal of Physics **38** (1960).

14. W. H. Henry and C. Garrett, **The Canadian Standard Free-Air Chamber for Medium Quality X-rays**, Canadian Journal of Physics **38**, 1677 – 1689 (1960).

15. W. H. Henry and J. H. Aitken, **Monitoring Ionization Chamber for an X-ray Generator**, British Journal of Radiology **34**, 404 (1961).

16. J. H. Aitken, L. de la Vergne, W. H. Henry, and T. P. L. Loftus, **Comparison of U.S. and Canadian Free-Air Ionizing Chambers**, British Journal of Radiology **35**, 65 (1962).

17. J. Borg and D. W. O. Rogers, **Monte Carlo Calculations of Photon Spectra in Air from ^{192}Ir Sources**, NRC Report PIRS-629r , (see http://www.irs.inms.nrc.ca/inms/irs/papers/PIRS629r/pirs629r.html) (1998).

18. J. H. Aitken and W. H. Henry, **A Portable Apparatus for Measuring Exposure in Roentgens from Strong Gamma-Ray Sources**, Int. J. of Applied Radiation and Isotopes **14**, 511 – 516 (1963).

19. J. H. Aitken and W. H. Henry, **Spectra of the Internally Scattered Radiation from large ^{60}Co Sources used in Teletherapy**, Int'l. J. of Applied Radiation and Isotopes. **15**, 713 – 724 (1964).

20. K. W. Geiger, R. Hum, and C. J. D. Jarvis, **Neutron Spectrum of a Ra-Be(α,n) Source**, Canadian Journal of Physics **42**, 1087 (1964).

21. W. H. Henry and C. Garrett, **Fractional Exposure Rate due to Scattered Radiation from a ^{60}Co Teletherapy Unit**, Int. J. of Applied Radiation and Isotopes **15**, 544 (1964).

22. W. H. Henry and C. Garrett, **Scattering of Uncollimated Cobalt-60 Gamma Radiation by Concrete and Lead Barriers**, Acta Radiologica **2**, 353 (1964).

23. K. W. Geiger and A. P. Baerg, **Improved Calibration of a Ra-Be(α,n) and an Am-Be(α,n) Neutron Source**, Canadian Journal of Physics **43**, 373 – 378 (1965).

24. L. Van der Zwan and K. W. Geiger, **Slowing Down Spectrum and Neutron Temperature in a Thermal Neutron Flux Density Standard**, Metrologia **2 2**, 1 (1966).

25. D. W. O. Rogers and J. Treurniet, **Monte Carlo calculated wall and axial non-uniformity corrections for primary standards of air kerma**, NRC Report PIRS–663, NRC, Ottawa, 1999 (see http://www.irs.inms.nrc.ca/inms/irs/papers/PIRS663/pirs663.html).

26. M. Boutillon, W. H. Henry, and P. J. Lamperti, **Comparison of exposure standards in the 10–50 kV X-ray region**, Metrologia **5**, 1 – 11 (1968).

27. E. Rotondi and K. W. Geiger, **A Neutron Dosemeter with Spherical Moderator Containing Absorbers and a BF_3 Counter**, Proc. of the I.R.P.A. Meeting in Rome, 1966 (Pergamon Press) (1968).

28. L. Van der Zwan, **Calculated Neutron Spectra from ^{9}Be(α,n) Sources**, Canadian Journal of Physics **46**, 1527 (1968).

29. W. H. Henry, P. J. Lamperti, and M. Boutillon, **Comparisons of Exposure Standards in the 10-50 kV X-Ray Region**, Metrologia **5**, 1 (1969).

30. N. V. Klassen and W. F. Schmidt, **Ionization of Liquid Argon by X-Rays: W-value**, Canadian Journal of Chemistry **47**, 4286 – 4288 (1969).

31. L. Van der Zwan and K. W. Geiger, **The Neutron Spectrum of an ^{241}Am-Be(α,n) Source as Simulated by Accelerator Produced α-particles**, Int'l. J. Applied Radiation and Isotopes **21** (1970).

32. W. H. Henry, **Production of Low X-Ray Exposure Rates**, Health Physics **21**, 111 – 114 (1971).

33. L. Van der Zwan and K. W. Geiger, **The Neutron Spectrum from a Radioactive ^{210}PoLi(α,n) Source**, Transactions of the American Nuclear Society **I-166** (1971).

34. L. Van der Zwan and K. W. Geiger, **The Neutron Spectra and the Resulting Fluence-Kerma Conversions for ^{241}Am-Li(α,n) and ^{210}Po(α,n) Sources**, Health Physics **21**, 120 (1971).

35. D. W. O. Rogers, **Spencer-Attix water to air mass collision stopping power ratios as a function of depth and beam quality, R_{50}**, NRC Report PIRS–719, NRC Canada, Ottawa, K1A OR6, 2000.

36. K. M. Lokan, N. K. Sherman, R. W. Gillis, W. H. Henry, R. Levesque, A. Nowak, G. G. Teather;, and J. R. Lundquist, **Bremsstrahlung Attenuation Measurements in Ilmenite Loaded Concretes**, Health Physics **23**, 193 – 199 (1972).

37. L. Van der Zwan and K. W. Geiger, **Measurement of Neutron Spectra in High Intensity Gamma Field**, First Symp. on Neutron Dosimetry in Biology and Medicine, Neuherberg/Munchen, EUR 4896 d-f-e , 435 (1972).

38. A. P. Baerg, **Pressurized Proportional Counters for Coincidence Measurements**, Nuclear Instruments and Methods **112**, 95 (1973).

39. L. Van der Zwan, K. W. Geiger, and H. Werle, **The Neutron Spectrum of a ^{227}Ac-Be(α,n) Source**, Intl J of Appl Rad Isotopes **24**, 165 (1973).

40. W. H. Henry, **Tissue-air ratio, peak scatter factor and consistency**, Physics in Medicine and Biology **19**, 43 – 50 (1974).

41. N. K. Sherman, K. M. Lokan, R. M. Hutcheon, L. W. Funk, W. R. Brown, and P. Brown, **Bremsstrahlung radiators and Beam Filters for 25 MeV cancer therapy**, Medical Physics **1**, 185 (1974).

42. K. W. Geiger and L. Van der Zwan, **Radioactive Neutron Source Spectra from ^{9}Be (α,n) Cross Section Data**, Nuclear Instruments and Methods **131**, 315 – 321 (1975).

43. D. W. O. Rogers, **Analytic and Graphical Methods for Assigning Errors to Parameters in Non-Linear Least Squares Fitting**, Nuclear Instruments and Methods **127**, 253 – 260 (1975).

44. A. P. Baerg, K. Munzenmayer, and G. C. Bowes, **Live-Timed Anti-Coincidence Counting with Extending Dead-Time Circuitry**, Metrologia **12**, 77 – 80 (1976).

45. K. W. Geiger and D. W. O. Rogers, **Time Dependence of the Thermal Neutron Flux Density in the Canadian Flux Standard**, Metrologia **13**, 67 – 68 (1977).

46. K. W. Geiger, **Neutron Flux Density**, Ionizing Radiation Metrology **39** (1977).

47. K. W. Geiger, **Dissemination of the Flux Density**, Ionizing Radiation Metrology **133** (1977).

48. W. H. Henry and G. Yelle, **Irradiation Timer for Shutter of ^{60}Cobalt head**, Health Physics **32**, 559 (1977).

49. D. W. O. Rogers, M. L. Walsh, B. H. Orr, and N. Teekman, **Albedo-Dosimeter response to Mono-energetic Neutrons**, Health Physics **33**, 251 – 254 (1977).

50. D. W. O. Rogers, **The ^{45}Sc(p,n) Reaction as a Source of 10-50 keV Neutrons**, Nuclear Instruments and Methods **14**, 475 – 478 (1977).

51. W. H. Henry, **Corrections for Humidity - Letter to British Journal of Radiology**, British Journal Radiology **51**, 141 (1978).

52. W. B. Mann, A. P. Baerg, J. C. Brantley, R. L. Heath, B. Kahn, H. H. Ku, and A. A. Moghissi, **A Handbook of Radioactivity Measurement Procedures**, Pub. No. 58, National Council on Radiation Protection and Measurements. Washington, D.C. 20014, U.S.A. (1978).

53. J. W. Purdie, E. R. Inhaber, and N. V. Klassen, **Increased Sensitivity of Anoxic Mammalian Cells Irradiated with Single Pulses at Very High Dose Rates**, Sixth Symp. on Microdosimetry, Brussels, Belgium, May 22-26, 1978, Ed. by J. Booz and H. G. Ebert Harwood Academic, Vol. II , 1023 – 1032 (1978).

54. D. W. O. Rogers, **Conversion of neutrons/cm^2 to rem**, Health Physics **34**, 395 – 395 (1978).

55. L. Van der Zwan and K. W. Geiger, **Neutrons and γ-rays from radioactive ^{13}C(α,n) Sources**, Nuclear Instruments and Methods **157**, 199 (1978).

56. K. W. Geiger, **Geometrical Effects on Recoil Spectra in Proportional Counters**, Nuclear Instruments and Methods **166**, 213 – 215 (1979).

57. W. H. Henry, **On C_λ, C_E, and the Effective Wall Material of a Baldwin-Farmer Chamber**, Physics in Medicine and Biology **24**, 37 (1979).

58. R. M. Hutchson, S. O. Schriber, L. W. Funk, and N. K. Sherman, **Choosing a teletherapy electron accelerator target**, Medical Physics **6 6**, 211 (1979).

59. D. W. O. Rogers, **Why Not to Trust a Neutron Remmeter**, Health Physics **37**, 735 – 742 (1979).

60. K. W. Geiger, H. Feist, and J. Böhm, **Ion Losses in a plane-parallel ionization chamber irradiated with a pulsed electron beam**, Phys. Med. Biol. **25**, 677 – 682 (1980).

61. A. P. Baerg, **Multiple Channel $4\pi\beta - \gamma$ Anti-Coincidence Counting**, Nuclear Instruments and Methods **190**, 345 – 349 (1981).

62. D. W. O. Rogers and G. Van Dyk, **Use of a Neutron Remmeter to Measure Leakage Neutrons from Medical Electron Accelerators**, Medical Physics **8 8**, 163 – 166 (1981).

63. K. R. Shortt and R. M. Henkelman, **Ionization Chamber Measurement of a Pion Beam**, Radiation Research **85** (1981).

64. C. F. von Essen, H. Blattmann, J. F. Crawford, P. Fessenden, E. Pedroni, C. Perrett, M. Salzmann, K. Shortt, and E. Walder, **The Piotron: Initial Performance, Preparation and Experience with Pion Therapy**, Int'l J. of Radiation Oncology, Biology and Physics **8 8**, 1499 (1982).

65. W. H. Henry, **Tissue-air ratio and its associated 'in air' reference minimal phantom**, Phys. Med. Biol. **27**, 153 – 154 (1982).

66. D. W. O. Rogers, **More realistic Monte Carlo calculations of photon detector response functions**, Nucl. Instrum. Meth. **199**, 531 – 548 (1982).

67. K. R. Shortt and R. M. Henkelman, **Cavity Theory Calculations for Pion Stars**, Radiation Research **85**, 432 – 442 (1981).

68. A. F. Bielajew, **Renormalization of the self-consistent summation of exchange diagrams in a relativistic quantum field theory**, Nucl. Phys. **A404**, 428 – 442 (1983).

69. H. Mach and D. W. O. Rogers, **An Absolutely Calibrated Source of 6.13 MeV Gamma-rays**, IEEE Trans. on Nuclear Science **NS-30**, 1514 – 1517 (1983).

70. D. W. O. Rogers, **A Nearly Mono-Energetic 6 to 7 MeV Photon Calibration Source**, Health Physics **45**, 127 – 137 (1983).

71. A. F. Bielajew and B. D. Serot, **Renormalized Hartree-Fock equations in a nuclear relativistic quantum field theory**, Ann. Phys. **156**, 215 – 264 (1984).

72. W. H. Henry, **Report from the Consultative Committee on Standards for the Measurement of Ionizations (CCEMRI), Section I, (X-rays, gamma-rays and electrons)**, Physics in Medicine and Biology **29**, 1443 (1984).

73. H. Mach and D. W. O. Rogers, **A Measurement of Absorbed Dose to Water per Unit Incident 7 MeV Photon Fluence**, Physics in Medicine and Biology **29**, 1555 – 1570 (1984).

74. J. A. Rawlinson, A. F. Bielajew, P. Munro, and D. M. Galbraith, **Theoretical and experimental investigation of dose enhancement due to charge storage in electron-irradiated phantoms**, Med. Phys. **11**, 814 – 821 (1984).

75. D. W. O. Rogers, **Low energy electron transport with EGS**, Nucl. Inst. Meth. **227**, 535 – 548 (1984).

76. D. W. O. Rogers, **Fluence to Dose Equivalent Conversion Factors Calculated with EGS3 for Electrons from 100 keV to 20 GeV and Photons from 20 keV to 20 GeV**, Health Physics **46**, 891 – 914 (1984).

77. C. K. Ross, N. V. Klassen, and G. D. Smith, **The Effect of Various Dissolved Gases on the Heat Defect of Water**, Med. Phys. **11**, 653 – 658 (1984).

78. K. R. Shortt, **Tissue-Equivalent Dosimeters for Pion Therapy Beams**, Physics in Medicine and Biology **29**, 279 (1984).

79. L. Van der Zwan and K. W. Geiger, **Neutron Fluence Rate Measurements for Energies from 130 keV to 1900 keV**, Fifth Symposium on Neutron Dosimetry, Neuherberg/Munchen , 1247 (1984).

80. A. F. Bielajew, D. W. O. Rogers, and A. E. Nahum, **Monte Carlo simulation of ion chamber response to ^{60}Co – Resolution of anomalies associated with interfaces**, Phys. Med. Biol. **30**, 419 – 428 (1985).

81. A. F. Bielajew, **The Effect of Free Electrons on Ionization Chamber Saturation Curves**, Med. Phys. **12**, 197 – 200 (1985).

82. W. H. Henry, **Comments of "Correction factors for Survey Meter Calibrations"**, Health Physics **49**, 1309 (1985).

83. N. V. Klassen, **A Pulse Radiolysis Determination of the Spur Temperature**, Radiation Protection Dosimetry **13**, 141 – 144 (1985).

84. D. W. O. Rogers and A. F. Bielajew, **Calculated buildup curves for photons with energies up to ^{60}Co**, Med. Phys. **12**, 738 – 744 (1985).

85. D. W. O. Rogers, A. F. Bielajew, and A. E. Nahum, **Ion chamber response and $A_{\rm wall}$ correction factors in a ^{60}Co beam by Monte Carlo simulation**, Phys. Med. Biol. **30**, 429 – 443 (1985).

86. A. F. Bielajew and D. W. O. Rogers, **Interface artefacts in Monte Carlo calculations**, Phys. Med. Biol. **31**, 301 – 302 (1986).

87. A. F. Bielajew, **Ionization cavity theory: a formal derivation of perturbation factors for thick-walled ion chambers in photon beams**, Phys. Med. Biol. **31**, 161 – 170 (1986).

88. J. C. Cunningham, M. Woo, D. W. O. Rogers, and A. F. Bielajew, **The Dependence of Mass Energy Absorption Coefficient Ratios on Beam Size and Depth in a Phantom**, Medical Physics **13**, 496 – 502 (1986).

89. D. W. O. Rogers and A. F. Bielajew, **Differences in Electron Depth Dose Curves Calculated with EGS and ETRAN and Improved Energy Range Relationships**, Med. Phys. **13**, 687 – 694 (1986).

90. D. W. O. Rogers, C. K. Ross, K. R. Shortt, and A. F. Bielajew, **Comments on the ^{60}Co Graphite/Air Stopping-Power Ratio used in the AAPM Protocol**, Medical Physics **13**, 964 – 965 (1986).

91. D. W. O. Rogers, **Survey Instrument Calibrations in High Energy Photon Fields**, Health Physics **51**, 555 – 556 (1986).

92. D. C. Santry, **The NRCC Calibration Service for Radionuclide Calibrators In Canadian Hospitals**, Transactions of the American Nuclear Society **53**, 17 – 18 (1986).

93. R. J. Schulz, P. R. Almond, G. Kutcher, R. Loevinger, R. Nath, D. W. O. Rogers, N. Suntharalingham, K. A. Wright, and F. Khan, **Clarification of the AAPM Task Group 21 Protocol**, Medical Physics **13**, 755 – 759 (1986).

94. K. R. Shortt, C. K. Ross, A. F. Bielajew, and D. W. O. Rogers, **Electron Beam Dose Distributions Near Standard Inhomogeneities**, Phys. Med. Biol. **31**, 235 – 249 (1986).

95. A. F. Bielajew and D. W. O. Rogers, **PRESTA: The Parameter Reduced Electron-Step Transport Algorithm for electron Monte Carlo transport**, Nuclear Instruments and Methods **B18**, 165 – 181 (1987).

96. D. C. Santry, G. C. Bowes, and K. Munzenmayer, **Precision electronics for ionization chamber measurements**, Appl. Radiat. Isot. **38**, 879 – 883 (1987).

97. D. C. Santry, G. C. Bowes, and K. Munzenmayer, **Standardization of ^{67}Ga by live-timed anti-coincidence counting with extending dead time**, Appl. Radiat. Isot. **38**, 787 – 791 (1987).

98. T. R. Mackie, A. F. Bielajew, D. W. O. Rogers, and J. J. Battista, **Generation of energy deposition kernels using the EGS Monte Carlo code**, Phys. Med. Biol. **33**, 1 – 20 (1988).

99. Y. Mahara, A. Kudo, T. Kauri, D. C. Santry, and S. Miyahara, **Mobile Pu in Reservoir Sediments of Nagasaki, Japan**, Health Physics **54**, 107 – 111 (1988).

100. D. W. O. Rogers and C. K. Ross, **The Role of Humidity and Other Correction Factors in the AAPM TG–21 Dosimetry Protocol**, Medical Physics **15**, 40 – 48 (1988).

101. C. K. Ross and D. W. O. Rogers, **Comments on "The Effects of Air Humidity on Ionization Chamber Response"**, Radiation Protection Dosimetry, **22**, 127 – 128 (1988).

102. D. W. O. Rogers, G. M. Ewart, A. F. Bielajew, and G. van Dyk, **Calculation of Electron Contamination in a ^{60}Co Therapy Beam**, in "Proceedings of the IAEA International Symposium on Dosimetry in Radiotherapy" (IAEA, Vienna), Vol 1 , 303 – 312 (1988).

103. D. Jette and A. F. Bielajew, **Electron dose calculation using multiple scattering theory: Second order multiple scattering theory**, Med. Phys. **16**, 698 – 711 (1989).

104. C. K. Ross, N. V. Klassen, K. R. Shortt, and G. D. Smith, **A direct comparison of water calorimetry and Fricke dosimetry**, Phys. Med. Biol. **34**, 23 – 42 (1989).

105. D. C. Santry and G. C. Bowes, **Half-life of ^{99m}Tc in linearity testing of radionuclide calibrators**, Health Phys. **57**, 673 – 675 (1989).

106. K. R. Shortt, **The temperature dependence of G(Fe^{3+}) for Fricke dosemeter**, Phys. Med. Biol. **34**, 1923 – 1926 (1989).

107. A. F. Bielajew, **An analytic theory of the point-source non-uniformity correction factor for thick-walled ionisation chambers in photon beams**, Phys. Med. Biol. **35**, 517 – 538 (1990).

108. A. F. Bielajew, **Correction factors for thick-walled ionisation chambers in point-source photon beams**, Phys. Med. Biol. **35**, 501 – 516 (1990).

109. A. F. Bielajew, **On the technique of extrapolation to obtain wall correction factors for ion chambers irradiated by photon beams**, Med. Phys. **17**, 583 – 587 (1990).

110. J. Cygler, J. Szanto, M. Soubra, and D. W. O. Rogers, **Effects of Gold and Silver Backings on the Dose Rate Around an ^{125}I Seed**, Medical Physics, **17**, 172 – 178 (1990).

111. B. A. Faddegon, C. K. Ross, and D. W. O. Rogers, **Forward directed bremsstrahlung of 10 – 30 MeV electrons incident on thick targets of Al and Pb**, Medical Physics **17**, 773 – 785 (1990).

112. B. A. Faddegon, L. Van der Zwan, D. W. O. Rogers, and C. K. Ross, **Precision response estimation, energy calibration, and unfolding of spectra measured with a large NaI detector**, Nucl. Inst. Meth. **A301**, 138 – 149 (1990).

113. D. W. O. Rogers and A. F. Bielajew, **Wall attenuation and scatter corrections for ion chambers: measurements versus calculations**, Phys. Med. Biol. **35**, 1065 – 1078 (1990).

114. B. A. Faddegon, C. K. Ross, and D. W. O. Rogers, **Angular distribution of bremsstrahlung from 15 MeV electrons incident on thick targets of Be, Al and Pb**, Medical Physics **18**, 727 – 739 (1991).

115. N. V. Klassen and C. K. Ross, **Absorbed Dose Calorimetry using Various Aqueous Solutions**, Radiat. Phys. Chem. **38**, 95 – 104 (1991).

116. T. Kauri, T. Kauri, D. C. Santry, A. Kudo, and D. J. Kushner, **Uptake and Exclusion of Plutonium by Bacteria Isolated from Soil Near Nagasaki, Japan**, Environmental Toxicology and Water Quality, **6**, 109 – 112 (1991).

117. N. V. Klassen, **Les espèces primaires dans l'eau irradiée**, J. Chim. Phys. **88**, 747 – 757 (1991).

118. N. V. Klassen, K. R. Shortt, and C. K. Ross, **Calibration of Fricke Dosimetry by Water Calorimetry**, Proc. 7th Tihany Symposium on Radiation Chemistry, Hungarian Chem. Society (Budapest) , 543 – 547 (1991).

119. A. Kudo, Y. Mahara, T. Kauri, and D. Santry, **Fate of plutonium released from the Nagasaki A-bomb, Japan**, Water Science Technology **23**, 291 – 300 (1991).

120. A. Kudo, Y. Mahara, D. Santry, S. Miyahara, and J. Garrec, **Geographical distribution of fractionated local fallout from the Nagasaki A-bomb**, Environmental Radioactivity **14**, 305 – 316 (1991).

121. C. Malamut, D. W. O. Rogers, and A. F. Bielajew, **Calculation of water/air stopping-power ratios using EGS4 with explicit treatment of electron - positron differences**, Med. Phys. **18**, 1222 – 1228 (1991).

122. D. W. O. Rogers, **The role of Monte Carlo simulation of electron transport in radiation dosimetry**, Int'l J of Appl. Radiation and Isotopes, **42**, 965 – 974 (1991).

123. A. F. Bielajew and D. W. O. Rogers, **A standard timing benchmark for EGS4 Monte Carlo calculations**, Medical Physics **19**, 303 – 304 (1992).

124. A. F. Bielajew and D. W. O. Rogers, **Implications of new correction factors on primary air kerma standards in ^{60}Co beams**, Phys. Med. Biol. **37**, 1283 – 1291 (1992).

125. B. A. Faddegon, C. K. Ross, and D. W. O. Rogers, **Measurement of collision stopping powers of graphite, aluminum and copper for 10 and 20 MeV electrons**, Phys. Med. Biol. **37**, 1561 – 1571 (1992).

126. D. W. O. Rogers and B. A. Faddegon, **Re-evaluation of total stopping power of 5.3 MeV electrons in polystyrene**, Phys. Med. Biol. **37**, 969 – 983 (1992).

127. D. W. O. Rogers and C. K. Ross, **Comparison of IAEA 1987 and AAPM 1983 protocols for dosimetry calibration of radiotherapy beams**, Med. Phys. **19**, 213 – 214 (1992).

128. C. K. Ross and K. R. Shortt, **The effect of waterproofing sleeves on ionization chamber response**, Phys. Med. Biol. **37**, 1403 – 1411 (1992).

129. D. W. O. Rogers, **The advantages of absorbed-dose calibration factors**, Med. Phys. **19**, 1227 – 1239 (1992).

130. D. W. O. Rogers, **Calibration of Parallel–Plate Ion Chambers: Resolution of Several Problems by Using Monte Carlo Calculations**, Medical Physics **19**, 889 – 899 (1992).

131. S. Walker, A. F. Bielajew, M. Hale, and D. Jette, **Installation of EGS4 Monte Carlo code on an 80386-based microcomputer**, Med. Phys. **19**, 305 – 306 (1992).

132. P. Andreo, J. Medin, and A. F. Bielajew, **Constraints on the multiple scattering theory of Molière in Monte Carlo simulations of the transport of charged particles**, Med. Phys. **20**, 1315 – 1325 (1993).

133. A. F. Bielajew, **The effect of strong longitudinal magnetic fields on dose deposition from electron and photon beams**, Med. Phys. **20**, 1171 – 1179 (1993).

134. A. F. Bielajew, R. Wang, and S. Duane, **Incorporation of single scattering in the EGS4 Monte Carlo code system: Tests of Moliere theory**, Nuc Inst Meth **B82**, 503 – 512 (1993).

135. B. A. Faddegon and D. W. O. Rogers, **Comparisons of thick-target bremsstrahlung calculations by EGS4 and ITS**, Nuc. Inst. Meth. **A327**, 556 – 565 (1993).

136. M. A. Holmes, T. R. Mackie, W. Sohn, P. J. Reckwerdt, T. J. Kinsella, A. F. Bielajew, and D. W. O. Rogers, **The application of correlated sampling to the computation of electron beam dose distributions in heterogeneous phantoms using the Monte Carlo method**, Phys. Med. Biol. **38**, 675 – 688 (1993).

137. A. Kosunen and D. W. O. Rogers, **Beam Quality Specification for Photon Beam Dosimetry**, Med. Phys. **20**, 1181 – 1188 (1993).

138. N. V. Klassen, P. R. Walker, C. K. Ross, J. Cygler, and B. Lach, **Two-stage cell shrinkage and the OER for radiation-induced apoptosis of rat thymocytes**, Int. J. Radiat. Biol. **64**, 571 – 581 (1993).

139. A. Kudo, T. Suzuki, D. C. Santry, Y. Mahara, and J.-P. Garrec, **Effectiveness of Tree Rings for Recording Pu History at Nagasaki, Japan**, J. Environ. Radioactivity **21**, 55 – 63 (1993).

140. C.-M. Ma, D. W. O. Rogers, K. R. Shortt, C. K. Ross, A. E. Nahum, and A. F. Bielajew, **Wall correction and absorbed dose conversion factors for Fricke dosimetry: Monte Carlo calculations and measurements**, Med. Phys. **20**, 283 – 292 (1993).

141. D. W. O. Rogers, **How accurately can EGS4/PRESTA calculate ion chamber response?**, Med. Phys. **20**, 319 – 323 (1993).

142. K. R. Shortt, C. K. Ross, M. Schneider, K. Hohlfeld, M. Roos, and A.-M. Perroche, **A Comparison of Absorbed Dose Standards for High Energy X-rays**, Phys. Med. Biol. **38**, 1937 – 1955 (1993).

143. P. R. Almond, F. H. Attix, S. Goetsch, L. J. Humphries, H. Kubo, R. Nath, and D. W. O. Rogers, **The calibration and use of plane-parallel ionization chambers for dosimetry of electron beams: An extension of the 1983 AAPM protocol, Report of AAPM Radiation Therapy Committee Task Group 39**, Med. Phys. **21**, 1251 – 1260 (1994).

144. A. F. Bielajew, **Plural and multiple small-angle scattering from a screened Rutherford cross section**, Nucl. Inst. Meth. **B86**, 257 – 269 (1994).

145. A. F. Bielajew, **Comments on "Calculation of absorbed dose ratios using correlated Monte Carlo sampling"**, Med. Phys. **21**, 35 (1994).

146. M. Boutillon, B. M. Coursey, K. Hohlfeld, B. Owen, and D. W. O. Rogers, **Comparison of primary water absorbed dose standards**, IAEA–SM–330/48, in Proceedings of Symposium on Measurement Assurance in Dosimetry, (IAEA, Vienna) , 95 – 111 (1994).

147. J. Cygler, N. V. Klassen, C. K. Ross, T. J. Bichay, and G. P. Raaphorst, **The Survival of Aerobic and Anoxic Human Glioma and Melanoma Cells after Irradiation at Ultrahigh and Clinical Dose Rates**, Rad. Res. **140**, 79 – 84 (1994).

148. J. O. Deasy, P. R. Almond, M. T. McEllistrem, and C. K. Ross, **A simple magnetic spectrometer for radiotherapy electron beams**, Med. Phys. **21**, 1703 – 1714 (1994).

149. N. V. Klassen, D. Marchington, and H. C. E. McGowan, **H_2O_2 Determination by the I_3^- Method and by $KMnO_4$ Titration**, Anal. Chem. **66**, 2921 – 2925 (1994).

150. X. A. Li and D. W. O. Rogers, **Reducing Electron Contamination for Photon-Beam-Quality Specification**, Med. Phys. **21**, 791 – 798 (1994).

151. C.-M. Ma and A. E. Nahum, **Monte Carlo calculated correction factors for a NE2571 chamber in medium-energy photon beams**, In "Proceedings of the IAEA International Symposium on Measurement Assurance in Dosimetry" (Vienna: IAEA) , 371 – 382 (1994).

152. C.-M. Ma and A. E. Nahum, **Investigation of the new prototype of NPL design of plane-parallel chamber**, In "Proceedings of the IAEA International Symposium on measurement assurance in dosimetry" (Vienna: IAEA) , 495 – 504 (1994).

153. C.-M. Ma and A. E. Nahum, **Plane-parallel chambers in electron beams: Monte Carlo findings on perturbation correction factor**, In "Proceedings of the IAEA International Symposium on measurement assurance in dosimetry" (Vienna: IAEA) , 481 – 493 (1994).

154. C.-M. Ma, R. T. Knight, A. E. Nahum, and W. P. M. Mayles, **An investigation of the response of a simple design of plane-parallel chamber**, Phys. Med. Biol. **39**, 1593 – 1608 (1994).

155. C.-M. Ma, **Implementation of a Monte Carlo radiation transport code on a parallel computer system**, Parallel Computing **20**, 991 – 1005 (1994).

156. D. F. G. Reher, A. H. L. Aalbers, H. Bjerke, N. Drugge, T. Genka, M. J. Rossiter, D. Santry, J. P. Septhon, J. Seuntjens, G. Sibbens, H. Thierens, F. Verhaegen, T. T. Williams, and M. J. Woods, **Second EUROMET comparison of air-kerma rate and activity measurements of ^{192}Ir brachytherapy wires**, Nucl Inst Meth **A339**, 386 – 390 (1994).

157. C. K. Ross, K. R. Shortt, D. W. O. Rogers, and F. Delaunay, **A Test of TPR$^{20}_{10}$ as a Beam Quality Specifier for High-Energy Photon Beams**, IAEA–SM–330/10, in Proceedings of Symposium on Measurement Assurance in Dosimetry, (IAEA, Vienna) , 309 – 321 (1994).

158. D. W. O. Rogers, C. K. Ross, K. R. Shortt, N. V. Klassen, and A. F. Bielajew, **Towards a Dosimetry System Based on Absorbed-Dose Standards**, IAEA–SM–330/9 in Proc. of Symp. on Meas. Assurance in Dosimetry, (IAEA, Vienna) , 565 – 580 (1994).

159. D. Santry and G. Bowes, **A personal computer based data acquisition system for the direct standardization of radionuclides**, Nucl. Instr. Meth. A **339**, 349 – 356 (1994).

160. C. M. Wells, T. R. Mackie, M. B. Podgorsak, M. A. Holmes, N. Papanikolaou, P. J. Reckwerdt, J. Cygler, D. W. O. Rogers, A. F. Bielajew, D. G. Schmidt, and J. K. Muehlenkamp, **Measurements of electron dose distribution near inhomogeneities using a plastic scintillator detector**, Int. J. Radiat. Oncol. Biol. Phys. **29**, 1157 – 1165 (1994).

161. G. Bortels, C. Hurtgen, and D. Santry, **Nuclide analysis on low-statistics alpha-particle spectra**, Int. J. Appl. Radiat. Isot. **46**, 1135 – 1144 (1995).

162. G. X. Ding, D. W. O. Rogers, and T. R. Mackie, **Calculation of stopping-power ratios using realistic clinical electron beams**, Med. Phys. **22**, 489 – 501 (1995).

163. J.-P. Garrec, T. Suzuki, Y. Mahara, D. Santry, S. Miyahara, M. Sugahara, J. Zheng, and A. Kudo, **Nuclide analysis on low-statistics alpha-particle spectra**, Int. J. Appl. Radiat. Isot. **46**, 1135 – 1144 (1995).

164. J.-P. Garrec, T. Suzuki, Y. Mahara, D. Santry, S. Miyahara, M. Sugahara, Z. Zheng, and A. Kudo, **Plutonium in Tree Rings from France and Japan**, Int. J. Appl. Radiat. Isot. **46**, 1271 – 1278 (1995).

165. A. Kudo, Y. Mahara, D. Santry, T. Suzuki, S. Miyahara, M. Sugahara, J. Zheng, and J.-P. Garrec, **Plutonium mass balance released from the Nagasaki A-bomb and the application for future environmental research**, Int. J. Appl. Radiat. Isot. **46**, 1089 – 1098 (1995).

166. A. Kudo, R. Koerner, D. Fisher, J. Bourgeois, D. Santry, Y. Mahara, and M. Sugahara, **Plutonium from Nagasaki A-Bomb as a possible tracer for global transport using existing initial conditions and ice cores**, Ice-core studies of global biogeochemical cycles, NATA ASI series **130**, 417 – 425 (1995).

167. X. A. Li and D. W. O. Rogers, **Electron mass scattering powers: Monte Carlo and analytical calculations**, Med. Phys. **22**, 531 – 541 (1995).

168. D. W. O. Rogers, B. A. Faddegon, G. X. Ding, C.-M. Ma, J. Wei, and T. R. Mackie, **BEAM: A Monte Carlo code to simulate radiotherapy treatment units**, Med. Phys. **22**, 503 – 524 (1995).

169. B. B. Sorcini, P. Andreo, A. F. Bielajew, S. Hyödynmaa, and A. Brahme, **An improved energy-range relationship for high energy electron beams based on multiple accurate experimental and Monte Carlo data sets**, Phys. Med. Biol. **40**, 1135 – 1159 (1995).

170. F. Verhaegen and J. Seuntjens, **Monte Carlo study of electron spectra and backscatter dose in the vicinity of media interfaces for monoenergetic photons of 50 - 1250 keV**, Radiation Research **143**, 334 – 342 (1995).

171. A. F. Bielajew, **A hybrid multiple-scattering theory for electron-transport Monte Carlo calculations**, Nucl. Inst. Meth. **B111**, 195 – 208 (1996).

172. D. T. Burns, G. X. Ding, and D. W. O. Rogers, $\mathbf{R_{50}}$ **as a beam quality specifier for selecting stopping-power ratios and reference depths for electron dosimetry**, Med. Phys. **23**, 383 – 388 (1996).

173. J. L. Chartier, B. Grosswendt, G. F. Gualdrini, H. Hirayama, C.-M. Ma, F. Padoani, N. Petoussi, S. M. Seltzer, and M. Terrissol, **Reference fluence-to-dose-equivalent conversion coefficients and angular-dependence factors for 4-element ICRU tissue, water and PMMA slab phantoms irradiated by broad electron beams**, Radiation Protection Dosimetry **63**, 7 – 14 (1996).

174. G. X. Ding, D. W. O. Rogers, and T. R. Mackie, **Mean energy, energy-range relationship and depth-scaling factors for clinical electron beams**, Med. Phys. **23**, 361 – 376 (1996).

175. M. E. Van Eykeren, H. Thierens, J. Seuntjens, P. G. I. Lemahieu, and K. Strijckmans, **Kinetics of [Methyl-11C]Thymidine in Patients with Squamous Cell Carcinoma of the Head and Neck**, Acta Oncologica **35**, 737 – 741 (1996).

176. I. Kawrakow, **Electron transport: multiple and plural scattering**, Nuclear Instruments and Methods **B108**, 23 – 34 (1996).

177. I. Kawrakow, M. Fippel, and K. Friedrich, **3D Electron Dose Calculation using a Voxel based Monte Carlo Algorithm**, Med. Phys. **23**, 445 – 457 (1996).

178. I. Kawrakow, **Electron transport: longitudinal and lateral correlation algorithm**, Nuclear Instruments and Methods **B114**, 307 – 326 (1996).

179. N. V. Klassen, **Ice near 0°C: radiolysis and absorbed dose calorimetry**, Radiat. Phys. Chem. **48**, 281 – 287 (1996).

180. Y. Nogami and C. K. Ross, **Scattering from a nonsymmetric potential in one-dimension as a coupled channel problem**, Am. J. Phys. **64**, 923–928 (1996).

181. H. Palmans, J. Seuntjens, F. Verhaegen, J.-M. Denis, S. Vynckier, and H. Thierens, **Water Calorimetry and Ionisation Chamber Dosimetry in a 85 MeV Clinical Proton Beam**, Med. Phys. **23**, 643–649 (1996).

182. H. Palmans, J. Seuntjens, F. Verhaegen, J. M. Denis, S. Vynckier, and H. Thierens, **Water Calorimetry Measurements in a 85 MeV Clinical Proton Beam**, Bull Cancer/Radiother **83 (Suppl 1)**, 176s – 178s (1996).

183. C. J. Peters, N. G. Tarr, K. Shortt, I. Thomson, and G. F. McKay, **A floating gate MOSFET gamma detector**, Can. J. Phys. **74(suppl.)**, S135 – S138 (1996).

184. C. K. Ross and N. V. Klassen, **Water calorimetry for radiation dosimetry**, Phys. Med. Biol. **41**, 1 – 29 (1996).

185. C. K. Ross and M. S. MacPherson, **Comments on 'A New Method to Determine Ratios of Electron Stopping Powers to an Improved Accuracy'**, Phys. Med. Biol. **41**, 785 – 788 (1996).

186. J. Seuntjens and F. Verhaegen, **Dependence of overall correction factor of a cylindrical ionization chamber on field size and depth in medium energy X-ray beams**, Med. Phys. **23**, 1789 – 1796 (1996).

187. G. X. Ding, D. W. O. Rogers, J. E. Cygler, and T. R. Mackie, **Electron fluence correction factors used in conversion of dose in plastic to dose in water**, Med. Phys. **24**, 161 – 176 (1997).

188. M. Fippel, I. Kawrakow, and K. Friedrich, **Electron beam dose calculations with the VMC algorithm and the verification data set of the NCI working group**, Phys. Med. Biol. **42**, 501 – 520 (1997).

189. N. V. Klassen and C. K. Ross, **Water Calorimetry: the Heat Defect**, J. Res. Natl. Inst. Stand. Technol. **102**, 63 – 74 (1997).

190. I. Kawrakow, **Improved modeling of multiple scattering in the Voxel Monte Carlo model**, Med. Phys. **24**, 505 – 517 (1997).

191. N. V. Klassen, L. Van der Zwan, and J. E. Cygler, **GafChromic MD-55: Investigated as a precision dosimeter**, Med. Phys. **24**, 1924 – 1934 (1997).

192. X. A. Li, D. Salhani, and C.-M. Ma, **Characteristics of orthovoltage x-ray therapy beam at extended SSD for applications with end plates**, Phys. Med. Biol. **42**, 357 – 370 (1997).

193. C.-M. Ma and J. P. Seuntjens, **Correction factors for water-proofing sleeves in kilovoltage x-ray beams**, Med. Phys. **24**, 1507 – 1513 (1997).

194. C.-M. Ma, B. A. Faddegon, D. W. O. Rogers, and T. R. Mackie, **Accurate characterization of Monte Carlo calculated electron beams for radiotherapy**, Med. Phys. **24**, 401 – 416 (1997).

195. K. R. Shortt, C. K. Ross, and I. Janovsky, **The Response of LiF TLDs to ^{137}Cs and ^{60}Co γ-Rays**, Rad. Prot. Dosim. **69**, 257 – 266 (1997).

196. H. Tölli, A. F. Bielajew, O. Mattsson, G. Sernbo, and K. A. Johansson, **Fluence non-uniformity effects in air kerma determination around brachytherapy sources**, Phys. Med. Biol. **42**, 1301 – 1318 (1997).

197. G. M. Daskalov, E. Loffler, and J. F. Williamson, **Monte Carlo-aided dosimetry of a new high dose-rate brachytherapy source**, Med. Phys. **25**, 2200 – 2208 (1998).

198. G. M. Daskalov, A. S. Kirov, and J. F. Williamson, **Analytical approach to heterogeneity correction factor calculation for brachytherapy**, Med. Phys. **25**, 722–735 (1998).

199. I. Kawrakow and A. F. Bielajew, **On the representation of electron multiple elastic-scattering distributions for Monte Carlo calculations**, Nuclear Instruments and Methods **134B**, 325 – 336 (1998).

200. I. Kawrakow and A. F. Bielajew, **On the condensed history technique for electron transport**, Nuclear Instruments and Methods **142B**, 253 – 280 (1998).

201. A. Kudo, J. Zheng, R. Koerner, D. Fisher, D. Santry, Y. Mahara, and M. Sugahara, **Global transport rates of ^{137}Cs and $^{239+240}$Pu originating from the Nagasaki A-bomb in 1945 as determined from Analysis of Canadian Artic Ice Cores**, Environmental Radioactivity, in press **40**, 289 – 298 (1998).

202. C.-M. Ma, X. A. Li, and J. P. Seuntjens, **Study of dosimetry consistency for kilovoltage x-ray beams**, Med. Phys. **25**, 2376 – 2384 (1998).

203. D. W. O. Rogers, **A new approach to electron beam reference dosimetry**, Med. Phys. **25**, 310 – 320 (1998).

204. D. C. Santry, **The Canadian Experience in Performing Accuracy Checks on Administered Doses of Radiopharmaceuticals**, J. Appl. Radiat. Isot. **49**, 1453 – 1458 (1998).

205. N. G. Tarr, G. F. MacKay, K. Shortt, and I. Thomson, **A floating gate MOSFET dosimeter requiring no external bias supply**, IEEE Tran. Nuc. Sci **45**, 1470 – 1474 (1998).

206. G. G. Zhang, D. W. O. Rogers, J. E. Cygler, and T. R. Mackie, **Effects of changes in stopping-power ratios with field size on electron beam ROFs**, Med. Phys. **25**, 1711 – 1724 (1998).

207. J. Borg and D. W. O. Rogers, **Spectra and Air-Kerma Strength for Encapsulated ^{192}Ir Sources**, Med. Phys. **26**, 2441 – 2444 (1999).

208. G. X. Ding, J. E. Cygler, G. G. Zhang, and M. K. Yu, **Evaluation of a commercial three-dimensional electron beam treatment planning system**, Med. Phys. , 2571 – 2580 (1999).

209. N. V. Klassen, K. R. Shortt, J. P. Seuntjens, and C. K. Ross, **Fricke dosimetry: the difference between G(Fe^{3+}) for ^{60}Co γ-rays and high-energy x-rays**, Phys. Med. Biol. **44**, 1609 – 1624 (1999).

210. Y. Li, J. Rungis, K.-T. Kim, Y. M. Cho, T. R. McComb, J. G. Dunn, L. Van der Zwan, and D. Hoffman, **Inter-Laboratory Comparison of High Direct Voltage Resistance Dividers**, IEEE Transactions: Instrumentation and Measurement **48**, 158 – 161 (1999).

211. C.-M. Ma and J. P. Seuntjens, **Mass-energy absorption coefficient and backscatter factor ratios for kilovoltage x-ray beams**, Phys. Med. Biol. **44**, 131 – 143 (1999).

212. G. Mora, A. Maio, and D. W. O. Rogers, **Monte Carlo simulation of a typical ^{60}Co therapy source**, Med. Phys. **26**, 2494 – 2502 (1999).

213. D. W. O. Rogers and C. L. Yang, **Corrected relationship between %dd(10)$_x$ and stopping-power ratios**, Med. Phys. **26**, 538 – 540 (1999).

214. D. W. O. Rogers, **Correcting for electron contamination at dose maximum in photon beams**, Med. Phys. **26**, 533 – 537 (1999).

215. J. Seuntjens and H. Palmans, **Correction factors and performance of a 4^{o}C sealed water calorimeter.**, Phys. Med. Biol. **44**, 627 – 646 (1999).

216. P. R. Almond, P. J. Biggs, B. M. Coursey, W. F. Hanson, M. S. Huq, R. Nath, and D. W. O. Rogers, **AAPM's TG–51 Protocol for Clinical Reference Dosimetry of High-Energy Photon and Electron Beams**, Med. Phys. **26**, 1847 – 1870 (1999).

217. G. G. Zhang, D. W. O. Rogers, J. E. Cygler, and T. R. Mackie, **Monte Carlo investigation of electron beam output factors vs size of square cutout**, Med. Phys. **26**, 743 – 750 (1999).

218. J. Borg, I. Kawrakow, D. W. O. Rogers, and J. P. Seuntjens, **Monte Carlo study of correction factors for Spencer-Attix cavity theory at photon energies at or above 100 keV**, Med. Phys. **27**, 1804 – 1813 (2000).

219. G. M. Daskalov, R. S. Baker, D. W. O. Rogers, and J. F. Williamson, **Dosimetric Modeling of the MicroSelectron High-Dose Rate ^{192}Ir Source by the Multigroup Discrete Ordinates Method**, Med. Phys. **27**, 2307 – 2319 (2000).

220. G. M. Daskalov, R. S. Baker, R. C. Little, D. W. O. Rogers, and J. F. Williamson, **Two-Dimensional Discrete Ordinates Photon Transport Calculations for Brachytherapy Dosimetry Applicationsy**, Nuclear Science and Engineering **134**, 121 – 134 (2000).

221. I.Kawrakow and M. Fippel, **Investigation of variance reduction techniques for Monte Carlo photon dose calculation using XVMC**, Phys. Med. Biol. **45**, 2163 – 2184 (2000).

222. I. Kawrakow, **Accurate condensed history Monte Carlo simulation of electron transport. I. EGSnrc, the new EGS4 version**, Med. Phys. **27**, 485 – 498 (2000).

223. I. Kawrakow, **Accurate condensed history Monte Carlo simulation of electron transport. II. Application to ion chamber response simulations**, Med. Phys. **27**, 499 – 513 (2000).

224. D. W. O. Rogers, **Comment on "On the beam quality specification of high-energy photons for radiotherapy dosimetry [Med. Phys. 27 434 – 440 (2000)]**, Med. Phys. **27**, 441 – 444 (2000).

225. J. P. Seuntjens, C. K. Ross, K. R. Shortt, and D. W. O. Rogers, **Absorbed-dose beam quality conversion factors for cylindrical chambers in high-energy photon beams**, Med. Phys. **27**, 2763 – 2779 (2000).

226. D. Sheikh-Bagheri, D. W. O. Rogers, C. K. Ross, and J. P. Seuntjens, **Comparison of measured and Monte Carlo calculated dose distributions from the NRC linac**, Med. Phys. **27**, 2256 – 2266 (2000).

227. K. Shortt, J. Shobe, and S. Domen, **Comparison of Dosimetry Calibration factors at the NRCC and the NIST**, Med. Phys. **27**, 1644 – 1654 (2000).

228. G. M. Daskalov and J. F. Williamson, **Monte Carlo-aided dosimetry of the new Bebig IsoSeed ^{103}Pd interstitial brachytherapy seed**, Med. Phys. **28**, 2154 – 2161 (2001).

229. K. R. Shortt, C. K. Ross, J. P. Seuntjens, F. Delaunay, A. Ostrowsky, P. Gross, and E. Leroy, **Comparison of dosimetric standards of Canada and France for Photons at ^{60}Co and higher energies**, Phys. Med. Biol. **46**, 2119 – 2142 (2001).

230. C.-M. Ma, C. W. Coffey, L. A. DeWerd, R. Nath, C. Liu, S. M. Seltzer, and J. Seuntjens, **AAPM protocol for 40 – 300 kV x-ray beam dosimetry in radiotherapy and radiobiology**, Med. Phys. **28**, 868 – 893 (2001).

231. G. M. Daskalov, R. S. Baker, D. W. O. Rogers, and J. F. Williamson, **Multigroup discrete ordinates modelling of ^{125}I 6702 seed dose distributions using a broad energy-group cross section representation**, Med. Phys. **29**, 113 – 124 (2002).

232. N. V. Klassen and C. K. Ross, **Water Calorimetry: A Correction to the Heat Defect Calculations**, J. Res. Natl. Inst. Stand. Technol. **107**, 171 – 178 (2002).

233. I. Kawrakow, **On the de-noising of Monte Carlo calculated dose distributions**, Phys. Med. Biol. **47**, 3087 – 3104 (2002).

234. D. W. O. Rogers, **Review of 'ICRU Report 64: Dosimetry of high-energy photon beams based on standards of absorbed dose to water'**, Phys. Med. Biol. **47**, 3663 – 3665 (2002).

235. D. Sheikh-Bagheri and D. W. O. Rogers, **Sensitivity of megavoltage photon beam Monte Carlo simulations to electron beam parameters**, Med. Phys. **29**, 379 – 390 (2002).

236. D. Sheikh-Bagheri and D. W. O. Rogers, **Calculation of nine megavoltage photon beam spectra using the BEAM Monte Carlo code**, Med. Phys. **29**, 391 – 402 (2002).

237. K. R. Shortt, A. F. Bielajew, C. K. Ross, K. J. Stewart, J. T. Burke, and M. J. Corsten, **The effect of wall thickness on the response of a spherical ionization chamber**, Phys. Med. Biol. **47**, 1721 – 1731 (2002).

238. B. R. B. Walters, I. Kawrakow, and D. W. O. Rogers, **History by history statistical estimators in the BEAM code system**, Med. Phys. **29**, 2745 – 2752 (2002).

239. E. S. Bergstrand, K. R. Shortt, C. K. Ross, and E. O. Hole, **An investigation of the photon energy dependence of the EPR alanine dosimetry system**, Phys. Med. Biol. **48**, 1753 – 1771 (2003).

240. L. A. Buckley, I. Kawrakow, and D. W. O. Rogers, **An EGSnrc investigation of cavity theory for ion chambers measuring air kerma**, Med. Phys. **30**, 1211 – 1218 (2003).

241. S. D. Davis, C. K. Ross, P. N. Mobit, L. Van der Zwan, W. J. Chase, and K. R. Shortt, **The response of LiF TLDs to photon beams in the energy range from 30 kV to 60Co γ-rays**, Radiat. Prot. Dosim. **106**, 33 – 44 (2003).

242. R. Doucet, M. Olivares, F. DeBlois, E. B. Podgorsak, I. Kawrakow, and J. Seuntjens, **Comparison of measured and Monte Carlo calculated dose distributions in inhomogeneous phantoms in clinical electron beams**, Phys. Med. Biol. **48**, 2339–2354 (2003).

243. N. I. Kalach and D. W. O. Rogers, **When is an accelerator photon beam "clinic-like" for reference dosimetry purposes**, Med. Phys. **30**, 1546 – 1555 (2003).

244. E. Mainegra-Hing, I. Kawrakow, and D. W. O. Rogers, **Calculations for plane-parallel ion chambers in ^{60}Co beams using the EGSnrc Monte Carlo code**, Med. Phys. **30**, 179 – 189 (2003).

245. D. W. O. Rogers and I. Kawrakow, **Monte Carlo calculated correction factors for primary standards of air-kerma**, Med. Phys. **30**, 521 – 543 (2003).

246. L. A. Buckley, I. Kawrakow, and D. W. O. Rogers, **CSnrc: correlated sampling Monte Carlo calculations using EGSnrc**, Med. Phys. **31**, in press (2004).

247. I. Kawrakow, **The effect of Monte Carlo statistical uncertainties on the evaluation of dose distributions in radiation treatment planning**, Phys. Med. Biol. **49**, 1549 – 1556 (2004).

248. I. Kawrakow, D. Rogers, and B. Walters, **Large efficiency improvements in BEAMnrc using directional bremsstrahlung splitting**, Med. Phys. **31**, 2883–2898 (2004).

249. J. P. McCaffrey, E. Mainegra-Hing, I. Kawrakow, K. R. Shortt, and D. W. O. Rogers, **Evidence for using Monte Carlo calculated wall attenuation and scatter correction factors for three styles of graphite-walled ion chambers**, Phys. Med. Biol. , 2491 – 2501 (2004).

250. J. Medin, C. K. Ross, G. Stuck, N. V. Klassen, and J. P. Seuntjens, **Commissioning of an NRC-type sealed water calorimeter at METAS using ^{60}Co γ-rays**, Phys. Med. Biol. **49**, 4073 – 4086 (2004).

251. G. G. Zeng, M. R. McEwen, D. W. O. Rogers, and N. V. Klassen, **An experimental and Monte Carlo investigation of the energy dependence of alanine/EPR dosimetry: I. Clinical x-ray beams**, Phys. Med. Biol. **49**, 257 – 270 (2004).

2 Chapters in Books

1. A. F. Bielajew and D. W. O. Rogers, **Electron Step-Size Artefacts and PRESTA**, in *Monte Carlo Transport of Electrons and Photons*, edited by T. M. Jenkins, W. R. Nelson, A. Rindi, A. E. Nahum, and D. W. O. Rogers, pages 115 – 137, Plenum Press, New York, 1988.

2. A. F. Bielajew and D. W. O. Rogers, **Variance-reduction techniques**, in *Monte Carlo Transport of Electrons and Photons*, edited by T. M. Jenkins, W. R. Nelson, A. Rindi, A. E. Nahum, and D. W. O. Rogers, pages 407 – 419, Plenum Press, New York, 1988.

3. A. F. Bielajew, **Electron Transport in $\vec{E}$ and $\vec{B}$ Fields**, in *Monte Carlo Transport of Electrons and Photons*, edited by T. M. Jenkins, W. R. Nelson, A. Rindi, A. E. Nahum, and D. W. O. Rogers, pages 421 – 434, Plenum Press, New York, 1988.

4. W. R. Nelson and D. W. O. Rogers, **Structure and Operation of the EGS4 code system**, in *Monte Carlo Transport of Electrons and Photons*, edited by T. M. Jenkins, W. R. Nelson, A. Rindi, A. E. Nahum, and D. W. O. Rogers, pages 287 – 306, Plenum Press, New York, 1988.

5. D. W. O. Rogers and A. F. Bielajew, **20 MeV electrons on a slab of water**, in *Monte Carlo Transport of Electrons and Photons*, edited by T. M. Jenkins, W. R.

Nelson, A. Rindi, A. E. Nahum, and D. W. O. Rogers, pages 139 – 152, Plenum Press, New York, 1988.

6. D. W. O. Rogers and A. F. Bielajew, **Experimental benchmarks of EGS**, in *Monte Carlo Transport of Electrons and Photons*, edited by T. M. Jenkins, W. R. Nelson, A. Rindi, A. E. Nahum, and D. W. O. Rogers, pages 307 – 322, Plenum Press, New York, 1988.

7. D. W. O. Rogers and A. F. Bielajew, **A comparison of EGS and ETRAN**, in *Monte Carlo Transport of Electrons and Photons*, edited by T. M. Jenkins, W. R. Nelson, A. Rindi, A. E. Nahum, and D. W. O. Rogers, pages 323 – 344, Plenum Press, New York, 1988.

8. D. W. O. Rogers and A. F. Bielajew, **Monte Carlo techniques of electron and photon transport for radiation dosimetry**, in *The Dosimetry of Ionizing Radiation, Vol III*, edited by K. R. Kase, B. E. Bjärngard, and F. H. Attix, pages 427 – 539, Academic Press, 1990.

9. D. W. O. Rogers, **Fundamentals of High Energy X-ray and Electron Dosimetry Protocols**, in *Advances in Radiation Oncology Physics, Medical Physics Monograph 19*, edited by J. Purdy, pages 181 – 223, AAPM, New York, 1992.

10. D. W. O. Rogers, **New Dosimetry Standards**, in *Advances in Radiation Oncology Physics, Medical Physics Monograph 19*, edited by J. Purdy, pages 90 – 110, AAPM, New York, 1992.

11. D. W. O. Rogers, **Fundamentals of Dosimetry Based on Absorbed-Dose Standards**, in *Teletherapy Physics, Present and Future*, edited by J. R. Palta and T. R. Mackie, pages 319 – 356, AAPM, Washington DC, 1996.

12. C.-M. Ma and J. P. Seuntjens, editors, ***Kilovoltage x-ray beam dosimetry for radiotherapy and radiobiology: Proceedings of a workshop***, Medical Physics Publ., Madison, WI, USA, 1999.

3 Published in Proceedings

1. K. W. Geiger, **Radioactive Be(α,n) and Be(γ,n) neutron sources**, IAEA Consultants' Meeting "Neutron Source Properties" March 1980, Debrecan, Hungary (IAEA,Vienna) (1980).

2. D. W. O. Rogers, A. E. Bielajew, and A. E. Nahum, **Monte Carlo Calculations of Electron Beams in Standard Dose Planning Geometries**, Proc. of Eighth Int'l Conf. on the Use of Computers in Radiotherapy, (IEEE Press) , 140 – 144 (1984).

3. A. F. Bielajew, D. W. O. Rogers, J. Cygler, and J. J. Battista, **A Comparison of Electron Pencil Beam and Monte Carlo Calculational Methods**, In "Proc. of the Ninth (1987) Int. Conf. on the Use of Computers in Radiation Therapy" ed. by I. A. D. Bruinvis et al. (North-Holland, Amsterdam) , 65 – 68 (1987).

4. N. V. Klassen and C. K. Ross, **The Radiation Chemistry of Water at High LET**, NRC Workshop on Water Calorimetry, NRC Report 29637 , 95 – 97 (1988).

5. N. V. Klassen, C. K. Ross, K. R. Shortt, and G. D. Smith, **The Chemical Heat Defect of Water**, NRC Workshop on Water Calorimetry, NRC Report 29637 , 55 – 59 (1988).

6. C. K. Ross, N. V. Klassen, K. R. Shortt, and G. D. Smith, **Water Calorimetry, with Emphasis on the Heat Defect**, NRC Workshop on Water Calorimetry, NRC Report 29637 , 69 – 75 (1988).

7. K. R. Shortt, N. V. Klassen, C. K. Ross, and G. D. Smith, **Ferrous Sulfate Dosimetry and its Role in Establishing an Absorbed Dose to Water Standard for the National Research Council of Canada**, NRC Workshop on Water Calorimetry, NRC Report 29637 , 121 – 126 (1988).

8. A. F. Bielajew, **Monte Carlo Modeling in External Electron-Beam Radiotherapy — Why Leave it to Chance?**, In "Proceedings of the XI'th Conference on the Use of Computers in Radiotherapy" (Medical Physics Publishing, Madison, Wisconsin) , 2 – 5 (1994).

9. N. V. Klassen, C. K. Ross, and K. R. Shortt, **Water calorimetry: Model and experiment**, Proc. of NPL Water Calorimetry Workshop (1994).

10. C. K. Ross, N. V. Klassen, and K. R. Shortt, **The development of a standard based on water calorimetry for absorbed dose to water**, Proc. of NPL Water Calorimetry Workshop (1994).

11. A. F. Bielajew and D. E. Cullen, **Incorporating the Lawrence Livermore photon interaction data base into the electron-photon Monte Carlo transport code EGS4**, In "Proceedings of the International Conference on Mathematics and Computations, Reactor Physics, and Environmental Analyses" (American Nuclear Society Press, La Grange Park, Illinois, U.S.A.) , 866 – 875 (1995).

12. A. F. Bielajew, **EGS4 timing benchmark results: Why Monte Carlo is a viable option for radiotherapy treatment planning**, In "Proceedings of the International Conference on Mathematics and Computations, Reactor Physics, and Environmental Analyses" (American Nuclear Society Press, La Grange Park, Illinois, U.S.A.) , 831 – 837 (1995).

13. A. Kudo, J. Zheng, I. Cayer, and D. Santry, **The application of artificial radionuclides from Nagasaki A-bomb as a global transport tracer at Canadian Artic Ice Caps**, Proceedings of the 10-th Pacific Basin Nuclear Conference, Atomic Energy Society of Japan **2**, 1366 – 1373 (1996).

14. A. F. Bielajew and I. Kawrakow, **From "black art" to "black box": Towards a step-size independent electron transport condensed history algorithm using the physics of EGS4/PRESTA-II**, In "Proceedings of the Joint International Conference on Mathematical Methods and Supercomputing for Nuclear Applications"

(American Nuclear Society Press, La Grange Park, Illinois, U.S.A.) , 1289 – 1298 (1997).

15. T. R. McComb, J. Dunn, D. M. Burgess, J. Rungis, Y. Li, L. Van der Zwan, and D. Hoffman, **Interlaboratoy Comparison of Transfer Standards for Direct Voltage Calibration of Industrial Measurement Systems**, in *Proc. Tenth International Symposium on High Voltage, Engineering, Montreal, Quebec, August 25-29*, volume 4, pages 1 – 5, 1997.

16. G. M. Daskalov, R. Baker, R. C. Little, D. W. O. Rogers, and J. F. Williamson, **Multigroup Discrete Ordinates Photon Transport Calculations of Water Kerma for Brachytherapy Applications**, Proceedings of the 1998 ANS Radiation Protection and Shielding Division Topical Conference (ANS, Inc., La Grange Park, IL 60526) **2**, 261 – 268 (1998).

17. C.-M. Ma and J. P. Seuntjens, **Correction factors for ion chamber waterproofing sleeves in Kilovoltage x-ray beams**, Proceedings of a workshop on Kilovoltage X-ray Beam Dosimetry, Stanford University, April 1997 , 179 – 194 (1999).

18. C.-M. Ma and J. P. Seuntjens, **Ratios of Mass Energy-Absorption Coefficients and Backscatter Factors for Biological Tissues**, Proceedings of a workshop on Kilovoltage X-ray Beam Dosimetry, Stanford University, April 1997 , 261 – 278 (1999).

19. C.-M. Ma, A. X. Li, and J. P. Seuntjens, **Study of Dosimetry Consistency for Kilovoltage X-ray Beams**, in *Kilovoltage x-ray beam dosimetry for radiotherapy and radiobiology: Proceedings of a workshop*, edited by C.-M. Ma and J. P. Seuntjens, pages 69 – 87, Medical Physics Publ., Madison, WI, USA, 1999.

20. C.-M. Ma, C. W. Coffey, L. A. Dewerd, C. Liu, R. Nath, S. M. Seltzer, and J. P. Seuntjens, **Status of Kilovoltage X-ray Beam Dosimetry in Radiotherapy**, in *Kilovoltage x-ray beam dosimetry for radiotherapy and radiobiology: Proceedings of a workshop*, edited by C.-M. Ma and J. P. Seuntjens, pages 27 – 42, Medical Physics Publ., Madison, WI, USA, 1999.

21. J. Seuntjens, A. H. L. Aalbers, T. W. M. Grimbergen, B. J. Mijnheer, H. Thierens, J. Van Dam, F. W. Wittkamper, J. Zoetelief, M. Piessens, and P. Piret, **Suitability of diamond detectors to measure central axis depth kerma curves for low and medium–energy x–rays**, in *Kilovoltage x-ray beam dosimetry for radiotherapy and radiobiology: Proceedings of a workshop*, edited by C.-M. Ma and J. P. Seuntjens, pages 227 – 238, Medical Physics Publ., Madison, WI, USA, 1999.

22. T. W. M. Grimbergen, A. H. L. Aalbers, B. J. Mijnheer, J. Seuntjens, H. Thierens, J. Van Dam, F. W. Wittkamper, and J. Zoetelief, **The NCS code of practice for dosimetry of low and medium energy x-rays**, in *Kilovoltage x-ray beam dosimetry for radiotherapy and radiobiology: Proceedings of a workshop*, edited by C.-M. Ma and J. P. Seuntjens, pages 55 – 68, Medical Physics Publ., Madison, WI, USA, 1999.

23. J. P. Seuntjens, L. Van der Zwan, and C.-M. Ma, **Type dependent correction factors for cylindrical chambers for in-phantom dosimetry in medium energy**

x-ray beams, in *Kilovoltage x-ray beam dosimetry for radiotherapy and radiobiology: Proceedings of a workshop*, edited by C.-M. Ma and J. P. Seuntjens, pages 159 – 174, Medical Physics Publ., Madison, WI, USA, 1999.

24. J. Medin, J. Seuntjens, N. Klassen, C. Ross, and G. Stucki, **The OFMET Sealed Water Calorimeter**, in *Proceedings of NPL Workshop on Recent Advances in Calorimetric Absorbed Dose Standards*, edited by A. J. Williams and K. E. Rosser, pages 65–73, National Physical Laboratory, Teddington, UK, 2000.

25. D. W. O. Rogers and R. Mohan, **Questions for comparison of clinical Monte Carlo codes**, in *The Use of Computers in Radiotherapy, XIIIth Int'l Conf., Heidelberg*, edited by W. Schlegel and T. Bortfeld, pages 120 – 122, Springer-Verlag, Heidelberg, 2000.

26. C. K. Ross, J. P. Seuntjens, N. V. Klassen, and K. R. Shortt, **The NRC Sealed Water Calorimeter: Correction Factors and Performance**, in *Proceedings of NPL Workshop on Recent Advances in Calorimetric Absorbed Dose Standards*, edited by A. J. Williams and K. E. Rosser, pages 90–102, National Physical Laboratory, Teddington, UK, 2000.

27. J. P. Seuntjens, I. Kawrakow, and C. K. Ross, **Revisiting Convective Motion in Stagnant Water Calorimeters Operated at Room Temperature**, in *Proceedings of NPL Workshop on Recent Advances in Calorimetric Absorbed Dose Standards*, edited by A. J. Williams and K. E. Rosser, pages 103–119, National Physical Laboratory, Teddington, UK, 2000.

28. M. Fippel, M. Alber, M. Birkner, W. Laub, F. Nüsslin, and I. Kawrakow, **Inverse treatment planning for radiation therapy based on fast Monte Carlo dose calculation**, in *Advanced Monte Carlo for Radiation Physics, Particle Transport Simulation and Applications: Proceedings of the Monte Carlo 2000 Meeting Lisbon*, edited by A. Kling, F. Barao, M. Nakagawa, L. Távora, and P. Vaz, pages 217 – 222, Springer, Berlin, 2001.

29. I. Kawrakow and D. W. O. Rogers, **The EGSnrc System, a status report**, in *Advanced Monte Carlo for Radiation Physics, Particle Transport Simulation and Applications: Proceedings of the Monte Carlo 2000 Meeting Lisbon*, edited by A. Kling, F. Barao, M. Nakagawa, L. Távora, and P. Vaz, pages 135 – 140, Springer, Berlin, 2001.

30. I. Kawrakow, **VMC^{++}, electron and photon Monte Carlo calculations optimized for Radiation Treatment Planning**, in *Advanced Monte Carlo for Radiation Physics, Particle Transport Simulation and Applications: Proceedings of the Monte Carlo 2000 Meeting Lisbon*, edited by A. Kling, F. Barao, M. Nakagawa, L. Távora, and P. Vaz, pages 229 – 236, Springer, Berlin, 2001.

31. D. W. O. Rogers, **Monte Carlo techniques for primary standards of ionizing radiation and for dosimetry protocols**, in *Advanced Monte Carlo for Radiation Physics, Particle Transport Simulation and Applications: Proceedings of the Monte*

Carlo 2000 Meeting Lisbon, edited by A. Kling, F. Barao, M. Nakagawa, L. Távora, and P. Vaz, pages 291 – 298, Springer, Berlin, 2001.

32. J. P. Seuntjens, I. Kawrakow, J. Borg, F. Hobeila, and D. W. O. Rogers, **Calculated and measured air-kerma response of ionization chambers in low and medium energy photon beams**, in *Recent developments in accurate radiation dosimetry, Proc. of an Int'l Workshop*, edited by J. P. Seuntjens and P. Mobit, pages 69 – 84, Medical Physics Publishing, Madison WI, 2002.

4 Internal Reports

1. J. H. Aitken and W. R. Dixon, **X-ray Spectra from a 100 kV Machine**, NRC Report 4864, NRC, Ottawa, 1958.

2. ICRU, **Specification of high-activity gamma-ray sources**, ICRU Report 18, ICRU, Washington D.C., 1971.

3. D. W. O. Rogers, **Analytic and Graphical Methods for Assigning Errors to Parameters in Non-Linear Least Squares Fitting**, NRC Report 14188 (July, 1974).

4. D. W. O. Rogers, **DOSE-VO1, A Fortran Program for Evaluating Albedo Dosimeter Readings**, NRC Report Report PXNR 2450 (Ottawa) (1977).

5. D. W. O. Rogers, **PLC-A Fortran program for use in Calibrating a Precision Long Counter**, NRC Report PXNR 2433 (1977).

6. D. W. O. Rogers, **On the Definition of Dose Equivalent Received from a Neutron Flux**, NRC Report PXNR 2432 (1977).

7. A. F. Bielajew and D. W. O. Rogers, **RALPHA, A Fortran subroutine to calculate neutron flux in the associated particle method**, NRC Report PXNR 2474 (1978).

8. D. W. O. Rogers and A. F. Bielajew, **Calculation of the Efficiency of a Proton Recoil Counter for measuring D-T neutrons**, NRC Report PXNR 2475 (1978).

9. D. W. O. Rogers, **FITTER, A Fortran Non-Linear Least Squares Fitting Package for the PDP-11**, NRC Report PXNR 2477 (1978).

10. D. W. O. Rogers, **A Note on the n-p Cross Section for Use in Recoil Proton Counter Efficiency Calculations**, NRC Report PXNR 2476 (1978).

11. D. W. O. Rogers, **Why not to trust a Neutron Remmeter**, NRC Report PXNR 2473 (June, 1978).

12. A. P. Baerg, G. C. Bowes, and K. Munzenmayer, **Additive Data Collection for Coincidence and Anti-coincidence Counting**, NRC Report PXNR-2545 (1980).

13. A. P. Baerg, **Note on $2\pi\beta$-proportional counting for thin α-sources**, NRC Report PXNR-2581 (1981).

14. G. M. Ewart and D. W. O. Rogers, **Calculated Thick Target Bremsstrahlung Angular Distributions and Shielding Calculations**, NRC Report PXNR 2640 (1982).

15. L. Van der Zwan and K. W. Geiger, **Establishment of a Known Neutron Flux Density at 144 keV and 565 keV and the Calibration of In-Foil Detectors for an International Fluence Comparison**, NRC Report PXNR-2639 (1982).

16. K. W. Geiger, **The History of Radium Measurement at the National Research Council of Canada**, NRC Report PXNR-2685 (1984).

17. D. W. O. Rogers and A. F. Bielajew, **The use of EGS for Monte Carlo calculations in medical physics**, Report PXNR-2692, National Research Council of Canada, (Ottawa, Canada K1A 0R6) (1984).

18. D. W. O. Rogers and G. M. Ewart, **Preliminary Report on a Project to Study Beam Contamination from a ^{60}Co Head**, NRC Report PXNR 2640 (Dec., 1984).

19. C. K. Ross and K. R. Shortt, **Energy Calibration of the 90-B Beam Line of the IRS Linac**, NRC Report Report PIRS-0021 (1985).

20. D. W. O. Rogers, G. M. Ewart, A. F. Bielajew, and G. van Dyk, **Calculation of Contamination of the ^{60}Co Beam from an AECL Therapy Source**, NRC Report PXNR-2710 (1985).

21. W. R. Nelson, H. Hirayama, and D. W. O. Rogers, **The EGS4 Code System**, Report SLAC–265, Stanford Linear Accelerator Center, Stanford, California, 1985.

22. A. F. Bielajew and D. W. O. Rogers, **Photoelectron angular distribution in the EGS4 code system**, National Research Council of Canada Report PIRS-0058 (1986).

23. A. F. Bielajew and D. W. O. Rogers, **PRESTA: The Parameter Reduced Electron-Step Transport Algorithm for electron Monte Carlo transport**, National Research Council of Canada Report PIRS-0042 (1986).

24. A. F. Bielajew, **RNG64 - A 64-bit random number generator for use on a VAX computer**, National Research Council of Canada Report PIRS-0049 (1986).

25. D. W. O. Rogers, **The Role of the Ionizing Radiation Standards Section of NRC**, NRC Report PIRS-0061 (1986).

26. K. R. Shortt and C. K. Ross, **The Canadian ^{60}Co Exposure Standard**, National Research Council of Canada Report PIRS-0052 (1986).

27. L. Van der Zwan and K. W. Geiger, **The β-Calibration Facility at the National Research Council of Canada**, NRC Report PIRS–0093 (Ottawa) (1986).

28. D. W. O. Rogers, **Services Offered by the Ionizing Radiation Standards Section**, NRC Report PIRS-0094 (1987).

29. D. C. Santry, **The Calibration of Radionuclide Calibrators in Canadian Hospitals**, NRC Report PIRS-0089 (1987).

30. A. F. Bielajew and D. W. O. Rogers, **Preliminary notes on wall attenuation corrections**, BIPM Document CCEMRI(1)/88-23 (1988).

31. B. Keller, G. Yelle, and K. R. Shortt, **The Positioning of a Newly Installed Philips MCN101 X-ray Tube**, NRC Report PIRS-0141 (Ottawa, Ont) (1988).

32. C. K. Ross, A. Nowak, R. S. Storey, M. Bercovitch, and W. F. Davidson, **Operation of the NRCC Linear Accelerator with Average Electron Currents Less than 10 Attoamperes**, NRC Report PIRS-0088 (1988).

33. D. W. O. Rogers, **Activities of the Ionizing Radiation Standards Section, 1985-1988. A Report to CCEMRI(1) of the BIPM.**, BIPM Document CCEMRI(1)/88-25 (1988).

34. K. R. Shortt, A. F. Bielajew, D. W. O. Rogers, and C. K. Ross, **Calculation of the Ratio of N_x for Cesium and Cobalt**, NRC Report PIRS-0142 (Ottawa, Ont) (1988).

35. K. R. Shortt, **The Temperature Dependence of G for the Fricke Dosemeter**, NRC Report PIRS-0170 (1988).

36. A. F. Bielajew, R. Mohan, and C. S. Chui, **Improved bremsstrahlung photon angular sampling in the EGS4 code system**, National Research Council of Canada Report PIRS-0203 (1989).

37. S. Duane, A. F. Bielajew, and D. W. O. Rogers, **Use of ICRU-37/NBS collision stopping powers in the EGS4 system**, NRCC Report PIRS-0173, Ottawa, March (1989).

38. D. W. O. Rogers, S. Duane, A. F. Bielajew, and W. R. Nelson, **Use of ICRU-37/NBS radiative stopping powers in the EGS4 system**, National Research Council of Canada report PIRS-0177 (1989).

39. D. W. O. Rogers, **Fundamentals of the AAPM's TG–21 Dosimetry Protocol**, NRC Report PIRS-0198 (Ottawa, Ontario) (1989).

40. H. Hirayama, W. R. Nelson, and D. W. O. Rogers, **How to Use EGS4 (in Japanese)**, KEK (Japanese National Laboratory for High Energy Physics) Internal Report 89-15 (1990).

41. D. W. O. Rogers, **Monte carlo Calculation of the Response of Parallel-Plate chambers in ^{60}Co beams**, NRC Report PIRS–0259 (Dec., 1990).

42. A. F. Bielajew and P. E. Weibe, **EGS-Windows - A Graphical Interface to EGS**, NRCC Report: PIRS-0274 (1991).

43. A. F. Bielajew, **Improved angular sampling for pair production in the EGS4 code system**, NRCC Report: PIRS-0287R (1994).

44. B. A. Faddegon, **Bremsstrahlung of 10 to 30 MeV Electrons Incident on Thick Targets**, PhD thesis, Carleton University, Ottawa, Canada (1991).

45. C.-M. Ma, A. E. Nahum, D. W. O. Rogers, and A. F. Bielajew, **Monte Carlo calculated wall correction and absorbed dose conversion factors for Fricke dosimetry using NRC vials**, NRCC Report PIRS285 (1991).

46. D. W. O. Rogers, **Compilation of Quantities Associated with Dosimetry Protocols**, NRC Report PIRS 291, Ottawa (1991).

47. D. W. O. Rogers, **Uncertainties in graphite to air stopping-power ratios**, BIPM Document CCEMRI(1)91-12 (1991).

48. D. W. O. Rogers, C. Malamut, H. M. Kramer, and M. Boutillon, **Preliminary results of a comparison of Monte Carlo codes used in standards laboratories**, BIPM document CCEMRI(1)/91-20 (1991).

49. D. C. Santry, **Radionuclide metrology progress report for NRCC**, Working Document BIPM, CCEMRI(II) 91-20 (1991).

50. L. Van der Zwan, **Energy response of Victoreen digital survey meter, model 660–1, with its probe, model 660–5**, NRC Report PIRS-0275 (1991).

51. A. Kosunen and D. W. O. Rogers, **DDSPR: A Code for calculating photon beam depth-dose curves and stopping-power ratios for an arbitrary spectrum**, National Research Council Canada Report PIRS-298 (1992).

52. J. Mizia and A. F. Bielajew, **The density effect on electron stopping powers in condensed, granular materials**, NRC Report PIRS-0322 , 1 – 10 (1992).

53. E. White and A. F. Bielajew, **Optimizing sampling efficiency for Monte Carlo applications**, National Research Council of Canada Report PIRS-0332 (1992).

54. A. F. Bielajew and D. W. O. Rogers, **Variance reduction techniques**, National Research Council of Canada Report PIRS-0396 (1993).

55. A. F. Bielajew, **Graphics!**, National Research Council of Canada Report PIRS-0397 (1993).

56. A. F. Bielajew, **How to manage the EGS4 system**, National Research Council of Canada Report PIRS-0391 (1993).

57. A. F. Bielajew, **Running EGS4 on other machines**, National Research Council of Canada Report PIRS-0392 (1993).

58. A. F. Bielajew, **Photon Monte Carlo simulation**, National Research Council of Canada Report PIRS-0393 (1993).

59. A. F. Bielajew, **Electron Monte Carlo simulation**, National Research Council of Canada Report PIRS-0394 (1993).

60. A. F. Bielajew, **Efficiency, statistics and sampling**, National Research Council of Canada Report PIRS-0395 (1993).

61. G. X. Ding and D. W. O. Rogers, **Monte Carlo simulation of NPL linac and calculation of dose distributions and water/air stopping-power ratios**, National Research Council of Canada Report PIRS 0399 (1993).

62. I. Janovsky and C. K. Ross, **The IRS Thermoluminescent Dosimetry System**, NRC Report PIRS 369 (1993).

63. J. L. Karr and A. F. Bielajew, `PIF` [**Prepare Input File (for `PEGS4`)**], National Research Council of Canada Report PIRS-0365 (1993).

64. J. L. Karr and A. F. Bielajew, **A 1-D cubic spline routine for fitting electron elastic cross sections**, National Research Council of Canada Report PIRS-0366 (1993).

65. D. W. O. Rogers, **Uncertainties in the ^{60}Co graphite to air stopping-power ratio and a re-evaluation of $(W/e)_{air}$ values**, Report PIRS–363 (National Research Council Canada, Ottawa, also BIPM Document CCEMRI(I)/93-28) (1993).

66. D. W. O. Rogers, **Activities at NRC, 1991–1993, Report to the CCEMRI(I) Meeting, BIPM, April 1993**, BIPM document CCEMRI(I)/93–27 (1993).

67. D. C. Santry, **Radionuclide Metrology Report for the National Research Council of Canada**, BIPM document CCEMRI(II)/93–12 (1993).

68. K. R. Shortt, **Report of a comparison of dosimetric measurement standards of the NRC and the NIST**, BIPM document CCEMRI(1)/93–29 (1993).

69. R. Wang, S. Duane, and A. F. Bielajew, **A new scheme for Monte Carlo electron and photon transport**, NRC Report PIRS-0355 (1993).

70. A. F. Bielajew, H. Hirayama, W. R. Nelson, and D. W. O. Rogers, **History, overview and recent improvements of EGS4**, National Research Council of Canada Report PIRS-0436 (1994).

71. C.-M. Ma and A. E. Nahum, **A correlated sampling method for Monte Carlo radiation transport and its implementation is the EGS4 code system**, Technical Report PIRS–421, National Research Council of Canada, Ottawa, Canada (1994).

72. W. R. Nelson, A. F. Bielajew, D. W. O. Rogers, and H. Hirayama, **EGS4 in '94: A decade of enhancements**, Stanford Linear Accelerator Report SLAC-PUB-6625 (Stanford, Calif) (1994).

73. D. C. Santry, **INMS Calibration Service for Radionuclide Calibrators in Canadian Hospitals**, NRC Report PIRS-0089 (1994).

74. K. R. Borg and A. F. Bielajew, **QUADPLOT: A programme to plot quadric surfaces**, National Research Council of Canada Report PIRS-0491 (1995).

75. A. F. Bielajew, **HOWFAR and HOWNEAR: Geometry Modeling for Monte Carlo Particle Transport**, National Research Council of Canada Report PIRS-0341 (1995).

76. M. J. Corsten, **Ionization chamber response for brachytherapy sources**, MSc thesis, Carleton University, Ottawa, Canada (1995).

77. G. X. Ding and D. W. O. Rogers, **Energy spectra, angular spread, and dose distributions of electron beams from various accelerators used in radiotherapy**, National Research Council of Canada Report PIRS-0439 , (see http://www.irs.inms.nrc.ca/inms/irs/papers/PIRS439/pirs439.html) (1995).

78. G. X. Ding, **An investigation of radiotherapy electron beams using Monte Carlo techniques**, Ph.D Thesis, Carleton University, Ottawa, Canada (1995).

79. C.-M. Ma and D. W. O. Rogers, **BEAMDP Users Manual**, NRC Report PIRS 509c(rev A) (2004).

80. C.-M. Ma and D. W. O. Rogers, **BEAMDP as a General-Purpose Utility**, NRC Report PIRS 509e(rev A) (2004).

81. C.-M. Ma and D. W. O. Rogers, **BEAMDP Users Manual**, NRC Report PIRS 509c (1995).

82. C.-M. Ma and D. W. O. Rogers, **BEAMDP as a General-Purpose Utility**, NRC Report PIRS 509e (1995).

83. C.-M. Ma, P. Reckwerdt, M. Holmes, D. W. O. Rogers, and B. Geiser, **DOSXYZ Users Manual**, NRC Report PIRS 509b (1995).

84. C.-M. Ma and D. W. O. Rogers, **Beam characterization: a multiple-source model**, NRC Report PIRS 509d (1995).

85. C.-M. Ma, **The fluence-to-dose-equivalent conversion factors for 4-element ICRU tissue, water and PMMA slab phantoms irradiated by external electron beams**, NRC Report PIRS 490 (1995).

86. H. C. E. McGowan, B. A. Faddegon, and C.-M. Ma, **STATDOSE for 3D dose distributions**, NRC Report PIRS 509f (1995).

87. D. W. O. Rogers, C.-M. Ma, G. X. Ding, and B. Walters, **BEAM Users Manual**, NRC Report PIRS 509a (1995).

88. D. W. O. Rogers, **NRC Activities and Publications, 1993–1995, Report to the CCEMRI(I) Meeting, BIPM, April 1995**, BIPM document CCEMRI(I)/95–35 (1995).

89. D. W. O. Rogers, **Re-evaluation of (W/e) and (W/e) $s_{gr,air}$: Status Report to CCEMRI(I) Meeting, BIPM, April 1995**, BIPM document CCEMRI(I)/95–34 (1995).

90. C. K. Ross, N. V. Klassen, and K. R. Shortt, **Absorbed dose to water via water calorimetry: A status report**, BIPM document CCEMRI(I)/95–36 (1995).

91. D. Sheikh-Bagheri and D. W. O. Rogers, **BEAM Example: A 16 MV photon beam**, NRC Report PIRS–509i (1995).

92. D. C. Santry, **Radionuclide Metrology Report for the National Research Council of Canada**, BIPM document CCEMRI(II)/95–24 (1995).

93. B. Walters and D. W. O. Rogers, **BEAM Example: Depth-Dose in a Phantom**, NRC Report PIRS–509j (1995).

94. B. Walters and D. W. O. Rogers, **QA for the BEAM System; Component Modules, Variance Reduction Options and Source Routines**, NRC Report PIRS–509k (1995).

95. G. G. Zhang and D. W. O. Rogers, **BEAM Example: A 10 MeV electron beam**, NRC Report PIRS 509h (1995).

96. D. Sheikh-Bagheri and D. W. O. Rogers, **PAW: A tool to analyze phase space and DOSXYZ output**, NRC Report PIRS–509m (1996).

97. C.-M. Ma, C. W. Coffey, L. A. DeWerd, C. Liu, R. Nath, S. M. Seltzer, and J. Seuntjens, **Status of Kilovoltage X-ray Beam Dosimetry in Radiotherapy**, National Research Council of Canada Report PIRS 0533 (1996).

98. D. C. Santry, **Service d'ètalonnage du CNRC pour les ètalonneurs de radionuclèides des hôpitaux canadiens**, CNRC PIRS-0089 (1996).

99. K. R. Shortt, C. K. Ross, and I. Janowsky, **The response of LiF TLDs to ^{137}Cs and ^{60}Co γ-rays**, NRC Report PIRS–0518 (Ottawa) (1996).

100. P. R. Almond, P. J. Biggs, B. M. Coursey, W. F. Hanson, M. S. Huq, R. Nath, and D. W. O. Rogers, **A status report on the absorbed dose to water based beam calibration protocol under consideration by the AAPM**, Report to IAEA committee of consultants, TG–51, 1996.

101. A. Booth and D. W. O. Rogers, **Monte Carlo study of effects of phantom size, radial position, and depth on photon beam calibration**, NRC Report PIRS–507, NRC Canada, Ottawa, K1A OR6, 1995.

102. C. K. Ross, J. P. Seuntjens, and N. V. Klassen, **The NRC Sealed Water Calorimeter: Technical Details and Cost Estimates**, NRC Report PIRS-0551, National Research Council, Ottawa, Canada, 1996.

103. T. W. M. Grimbergen, A. H. L. Aalbers, J. Van Dam, B. J. Mijnheer, J. Seuntjens, H. Thierens, F. W. Wittkamper, and J. Zoetelief, **Dosimetry of low and medium energy x–rays. A code of practice for use in radiotherapy and radiobiology**, NCS Report 10 of the Netherlands Commission on Radiation Dosimetry (1997).

104. D. W. O. Rogers, A. F. Bielajew, N. V. Klassen, C. K. Ross, J. P. Seuntjens, K. R. Shortt, and L. Van der Zwan, **NRC Activities and Publications, 1995–1997: Report to CCEMRI(I) Meeting, BIPM**, CCEMRI(1)97–29 (1997).

105. D. C. Santry, **Radionuclide Metrology Report for the National Research Council of Canada**, BIPM document CCEMRI(II)/97–23 (1997).

106. J. Borg and D. W. O. Rogers, **Monte Carlo Calculations of Photon Spectra in Air from ^{192}Ir Sources**, NRC Report PIRS-629r , (see http://www.irs.inms.nrc.ca/inms/irs/papers/PIRS629r/pirs629r.html) (1998).

107. I. Kawrakow, **The dose visualization tool dosxyz_show**, NRC Report PIRS 0624 (1998).

108. M. S. MacPherson and C. K. Ross, **A Magnetic Spectrometer for Electron Energy Calibration**, NRC Report PIRS 617 (1998).

109. M. S. MacPherson, **PhD Thesis: Accurate Measurements of the Collision Stopping Powers for 5 to 30 MeV Electrons**, NRC Report PIRS 626 (1998).

110. D. W. O. Rogers, C.-M. Ma, G. X. Ding, B. Walters, D. Sheikh-Bagheri, and G. G. Zhang, **BEAM98 Users Manual**, NRC Report PIRS 509(a)revC (1998).

111. J. A. Treurniet and D. W. O. Rogers, **BEAM and DOSXYZ GUI User's Manual**, NRC Report PIRS 0623 (1998).

112. G. G. Zhang, **Monte Carlo Investigation of Electron Beam Relative Output Factors**, PhD. thesis, Carleton University, Ottawa (1998).

113. H. Bjerke, A. S. Mollah, and K. R. Shortt, **Development of Procedures for Resolving Discrepancies Identified Through the Intercomparison of Ionization Chamber Calibration Factors in the IAEA/WHO Network of SSDLs**, Report of a Consultant's Meeting (98CT 02345) DMRP-9804, International Atomic Energy Agency, Vienna, Austria, 1998.

114. F. Delaunay, P. Gross, E. Leroy, A. Ostrowsky, and K. Shortt, **Etalonnage des trois chambres d'ionisation NE 2571 du NRCC a 12 et 20 MV pour la comparaison en dose absorbée dans l'eau (fin 1998)**, Technical Note LPRI/98/18, Laboratoire Primaire des Rayonnements Ionisants, Saclay, France, 1998.

115. M. Holmes, **Correlated Sampling in DOSXYZ**, NRC Report PIRS-0509Bi (1999).

116. D. W. O. Rogers and J. P. Seuntjens, **Photon beam quality specification for comparisons of absorbed dose to water**, BIPM document CCRI(1)99–25 (BIPM, Sèvres, France) (1999).

117. D. W. O. Rogers, I. Kawrakow, N. V. Klassen, C. K. Ross, J. P. Seuntjens, K. R. Shortt, L. Van der Zwan, J. Borg, and G. Daskalov, **NRC Activities and Publications, 1997–1999: Report to CCRI(I) Meeting, BIPM**, CCRI(1)99–24 (1999).

118. D. Sheikh-Bagheri, **Monte Carlo study of photon beams from medical linear accelerators; optimization, benchmark and spectra.**, PhD. thesis, Carleton University, Ottawa (1999).

119. J. A. Treurniet and D. W. O. Rogers, **BEAM, DOSXYZ and BEAMDP GUI User's Manual**, NRC Report PIRS 0623(rev A) (1999).

120. D. W. O. Rogers and J. Treurniet, **Monte Carlo calculated wall and axial non-uniformity corrections for primary standards of air kerma**, NRC Report PIRS–663, NRC, Ottawa, 1999 (see http://www.irs.inms.nrc.ca/inms/irs/papers/PIRS663/pirs663.html).

121. J. P. Seuntjens, C. K. Ross, N. V. Klassen, and K. R. Shortt, **A status report on the NRC sealed water calorimeter**, Technical Report PIRS–584, NRC Canada, Ottawa, K1A OR6, 1999.

122. B. R. B. Walters and D. W. O. Rogers, **Monte Carlo estimates of %dd(10)$_X$ for the NPL photon beams**, NRC Report PIRS–659, NRC, Ottawa, 1999.

123. P. J. Allisy-Roberts, D. T. Burns, K. R. Shortt, C. K. Ross, and J. P. Seuntjens, **Comparison of the standards of absorbed dose to water of the NRC, Canada and the BIPM for ^{60}Co γ rays**, Rapport BIPM-99/13 (2000).

124. P. J. Allisy-Roberts, D. T. Burns, K. R. Shortt, and C. K. Ross, **Comparison of the air kerma standards of the NRC and the BIPM for ^{60}Co γ rays**, Rapport BIPM-99/12 (2000).

125. C.-M. Ma, D. W. O. Rogers, and B. Walters, **DOSXYZ00 Users Manual**, NRC Report PIRS-0509B(revE) (2000).

126. I. Kawrakow and D. W. O. Rogers, **The EGSnrc Code System: Monte Carlo simulation of electron and photon transport**, Technical Report PIRS–701, National Research Council of Canada, Ottawa, Canada, 2000.

127. I. Kawrakow and D. W. O. Rogers, **The EGSnrc Code System: Monte Carlo simulation of electron and photon transport**, Technical Report PIRS–701 (4th printing), National Research Council of Canada, Ottawa, Canada, 2003.

128. I. Kawrakow, **The VMC^{++} code system: Monte Carlo simulation of electron and photon transport for application in Radiation Treatment Planning**, Technical Report PIRS–718, National Research Council of Canada, Ottawa, Canada, 2000.

129. D. W. O. Rogers, I. Kawrakow, J. P. Seuntjens, and B. R. B. Walters, **NRC User Codes for EGSnrc**, Technical Report PIRS–702, National Research Council of Canada, Ottawa, Canada, 2000.

130. D. W. O. Rogers, **Spencer-Attix water to air mass collision stopping power ratios as a function of depth and beam quality, $\mathbf{R}_{50}$**, NRC Report PIRS–719, NRC Canada, Ottawa, K1A OR6, 2000.

131. N. Kalach and D. W. O. Rogers, **What consitutes a clinic-like radiotherapy beam**, BIPM document CCRI(1)/01–26 (BIPM, Sèvres, France) (2001).

132. N. Kalach, **What constitutes a clinic-like radiotherapy photon beam**, MSc. thesis, Carleton University, Ottawa (2001).

133. N. V. Klassen, L. Van der Zwan, J. Cygler, and J. P. Seuntjens, **Experimental determination and Monte carlo simulations of backscatter factors in clinical kilovoltage x-ray beams using GafChromic MD-55-2 radiochromic film**, BIPM document CCRI(1)/01–24 (BIPM, Sèvres, France) (2001).

134. N. V. Klassen, **A model for computer simulations of the Fricke dosimeter**, BIPM document CCRI(1)/01–27 (BIPM, Sèvres, France) (2001).

135. E. Mainegra-Hing, D. W. O. Rogers, and I. Kawrakow, **Revision of correction factors for calibration of plane-parallel ionization chambers in ^{60}Co photon beams using EGSnrc Monte Carlo simulation system**, BIPM document CCRI(1)/01–28 (BIPM, Sèvres, France) (2001).

136. C.-M. Ma, D. W. O. Rogers, and B. Walters, **DOSXYZnrc Users Manual**, NRC Report PIRS 509b(revF) (2001).

137. D. W. O. Rogers, J. McCaffrey, I. Kawrakow, and K. R. Shortt, **Wall correction factors for graphite walled ion chambers**, BIPM document CCRI(1)/01–25 (BIPM, Sèvres, France) (2001).

138. D. W. O. Rogers, C.-M. Ma, G. X. Ding, B. Walters, D. Sheikh-Bagheri, and G. G. Zhang, **BEAMnrc Users Manual**, NRC Report PIRS 509(a)revF (2001).

139. D. Rogers, I. Kawrakow, N. Klassen, J. P. McCaffrey, C. Ross, K. Shortt, L. Van der Zwan, and G. Daskalov, **NRC Activities and Publications, 1999–2001: Report to CCRI(I) Meeting, BIPM**, CCRI(1)00–23 (2001).

140. J. A. Treurniet, B. R. B. Walters, and D. W. O. Rogers, **BEAMnrc, DOSXYZnrc and BEAMDP GUI User's Manual**, NRC Report PIRS 0623(rev B) (2001).

141. J. A. Treurniet, B. R. B. Walters, and D. W. O. Rogers, **BEAMnrc, DOSXYZnrc and BEAMDP GUI User's Manual**, NRC Report PIRS 0623(rev C) (2004).

142. D. T. Burns, K. R. Shortt, and L. Van der Zwan, **Comparison of the air-kerma standards of the NRC and the BIPM in the medium-energy x-ray range**, BIPM Report BIPM–02/15 (2002).

143. S. D. Davis, **High sensitivity lithium fluoride as a detector for environmental dosimetry**, MSc. thesis, McGill University, Montreal (2002).

144. B. R. B. Walters and D. W. O. Rogers, **DOSXYZnrc Users Manual**, NRC Report PIRS 794 (2002).

145. E. Mainegra-Hing, **User Manual for inputRZ, a GUI for the NRC RZ usercodes**, Technical Report PIRS–801, National Research Council of Canada, Ottawa, Canada, 2002.

146. I. Kawrakow, E. Mainegra-Hing, and D. W. O. Rogers, **EGSnrcMP: the multiplatform environment for EGSnrc**, Technical Report PIRS–877, National Research Council of Canada, Ottawa, Canada, 2003.

147. E. Mainegra-Hing, **User Manual for egs_inprz, a GUI for the NRC RZ usercodes**, Technical Report PIRS–801(RevA), National Research Council of Canada, Ottawa, Canada, 2003.

148. A. Olszanski, N. V. Klassen, C. K. Ross, and K. R. Shortt, **The IRS Fricke dosimetry system**, Technical Report PIRS–815, NRC, Ottawa, Canada, 2003.

149. D. W. O. Rogers, I. Kawrakow, J. P. Seuntjens, B. R. B. Walters, and E. Mainegra-Hing, **NRC User Codes for EGSnrc**, Technical Report PIRS–702(RevB), National Research Council of Canada, Ottawa, Canada, 2003.

150. D. W. O. Rogers, B. Walters, and I. Kawrakow, **BEAMnrc Users Manual**, NRC Report PIRS 509(a)revH (2004).

151. B. R. B. Walters and D. W. O. Rogers, **DOSXYZnrc Users Manual**, NRC Report PIRS 794 (rev A) (2004).

152. B. R. B. Walters and D. W. O. Rogers, **DOSXYZnrc Users Manual**, NRC Report PIRS 794 (rev B) (2004).

153. D. W. O. Rogers and A. Booth, **PROT: A General Purpose Utility for Calculating Quantities related to Dosimetry Protocols**, Technical Report PIRS–529(rev, in preparation), NRC Canada, Ottawa, K1A 0R6, 2003.

5 Published Abstracts

1. D. W. O. Rogers and A. F. Bielajew, **Calculation of ion chamber response to ^{60}Co**, Med. Phys. (abstract) **10**, 738 (1983).

2. A. F. Bielajew, **The effect of free electrons on ionization chamber saturation curves**, Med. Phys. (abstract) **11**, 746 (1984).

3. A. F. Bielajew, D. W. O. Rogers, and A. E. Nahum, **Electrode, phantom and guard ring effects on the response of ion chambers in ^{60}Co beams**, Med. Phys. (abstract) **11**, 398 (1984).

4. D. W. O. Rogers and A. F. Bielajew, **The use of EGS for Monte Carlo calculations in medical physics**, Med. Phys. (abstract) **11**, 417 – 418 (1984).

5. J. A. Rawlinson, A. F. Bielajew, D. M. Galbraith, and P. Munro, **Theoretical investigation of dose effects due to charge storage in insulating phantoms**, Med. Phys. (abstract) **11**, 383 (1984).

6. D. W. O. Rogers, A. F. Bielajew, and G. M. Ewart, **^{60}Co beam contamination from the source capsule**, Med. Phys. (abstract) **11**, 401 (1984).

7. C. K. Ross, K. R. Shortt, A. F. Bielajew, and D. W. O. Rogers, **Electron beam dose distributions in standard 3D dose planning geometries**, Med. Phys. (abstract) **11**, 748 (1984).

8. A. F. Bielajew and D. W. O. Rogers, **A new electron transport algorithm for EGS Monte Carlo calculations in medical physics**, Med. Phys. (abstract) **12**, 515 (1985).

9. T. R. Mackie, A. F. Bielajew, D. W. O. Rogers, and J. J. Battista, **Generation of photon dose spread arrays using the EGS4 Monte Carlo code**, Med. Phys. (abstract) **12**, 515 (1985).

10. D. W. O. Rogers, A. F. Bielajew, G. Van Dyk, and G. M. Ewart, **Calculation of the contamination of the beam from a ^{60}Co therapy unit**, Med. Phys. (abstract) **12**, 515 (1985).

11. K. R. Shortt, C. K. Ross, A. F. Bielajew, and D. W. O. Rogers, **Dosimetric measurements behind inhomogeneities exposed to electron beams and comparisons to EGS Monte Carlo calculations**, Med. Phys. (abstract) **12**, 508 (1985).

12. A. F. Bielajew and D. Jette, **Monte Carlo evaluation of second-order multiple scattering theory**, Med. Phys. (abstract) **13**, 588 (1986).

13. A. F. Bielajew and D. W. O. Rogers, **A comparison of experiment with Monte Carlo calculations of TLD response**, Med. Phys. (abstract) **13**, 609 (1986).

14. T. R. Mackie, A. F. Bielajew, D. W. O. Rogers, and J. J. Battista, **Fundamental dosimetry information obtained from dose spread arrays**, Med. Phys. (abstract) **13**, 592 (1986).

15. D. W. O. Rogers and A. F. Bielajew, **Improved relationships between electron beam energies and ranges**, Med. Phys. (abstract) **13**, 582 (1986).

16. D. W. O. Rogers, A. F. Bielajew, W. R. Nelson, and H. Hirayama, **Coherent scatter and stopping power effects in EGS4**, Med. Phys. (abstract) **13**, 593 (1986).

17. A. F. Bielajew and D. W. O. Rogers, **The point of measurement for thick-walled ion chambers in γ-beams**, Phys. Med. Biol. (Supplement I) (abstract) **33**, 142 (1988).

18. R. Mohan, G. Miklos, C.-S. Chui, and A. F. Bielajew, **Angular distributions of thick-target bremsstrahlung photons**, Phys. Med. Biol. (Supplement I) (abstract) **33**, 22 (1988).

19. D. W. O. Rogers and A. F. Bielajew, **Monte Carlo simulation of electron-photon transport and applications to radiation dosimetry**, Phys. Med. Biol. (Supplement I) (abstract) **33**, 5 (1988).

20. A. F. Bielajew, **Resolution of the discrepancy between Monte Carlo calculated $A_{\rm wall}$'s and extrapolation experiments**, Med. Phys. (abstract) **16**, 500 (1989).

21. A. F. Bielajew, **The EGS4 Monte Carlo code system on a SUN/UNIX platform**, Med. Phys. (abstract) **17**, 737 (1990).

22. A. F. Bielajew, R. Mohan, and C.-S. Chui, **Improved bremsstrahlung photon angular sampling in the EGS4 code system**, Med. Phys. (abstract) **17**, 522 (1990).

23. A. F. Bielajew, **Direct Monte Carlo tests of the point-source non-uniformity correction factor**, Med. Phys. (abstract) **17**, 546 (1990).

24. A. F. Bielajew, **Improving air-kerma (exposure) standards by Monte Carlo methods**, Phys. Med. Biol. (abstract) **35**, 285 (1990).

25. C. Malamut, D. W. O. Rogers, and A. F. Bielajew, **Explicit treatment of positrons in the calculation of stopping-power ratios**, Med. Phys. (abstract) **17**, 536 (1990).

26. T. R. Mackie, S. S. Kubsad, D. W. O. Rogers, and A. F. Bielajew, **The OMEGA project: Electron dose planning using Monte Carlo simulation**, Med. Phys. (abs) **17**, 730 (1990).

27. Y. Namito, W. R. Nelson, S. M. Seltzer, A. F. Bielajew, and D. W. O. Rogers, **Low-energy x-ray production studies using the EGS4 code system**, Med. Phys. (abstract) **17**, 557 (1990).

28. D. W. O. Rogers, A. F. Bielajew, T. R. Mackie, and S. S. Kubsad, **The OMEGA Project: treatment planning for electron-beam radiotherapy using Monte Carlo techniques**, Phys. Med. Biol. (abstract) **35**, 285 – 286 (1990).

29. A. F. Bielajew and W. R. Nelson, **Standard EGS4 on UNIX systems—evaluation of various UNIX architectures**, Med. Phys. (abstract) **18**, 607 (1991).

30. M. A. Holmes, T. R. Mackie, C. A. Sanders, S. S. Kubsad, D. W. O. Rogers, and A. F. Bielajew, **The OMEGA Project: Calculation of inverse cumulative probability distribution functions for electron transport for fast Monte Carlo simulations**, Med. Phys. (abstract) **18**, 608 (1991).

31. M. A. Holmes, T. R. Mackie, W. Sohn, C. A. Sanders, S. S. Kubsad, A. F. Bielajew, and D. W. O. Rogers, **The OMEGA Project: Variance reduction techniques for Monte Carlo simulations as applied to electron beam dosimetry**, Med. Phys. (abstract) **18**, 642 (1991).

32. P. E. Wiebe and A. F. Bielajew, **EGS_Windows—An EGS4 graphical interface**, Med. Phys. (abstract) **18**, 658 (1991).

33. A. F. Bielajew, **The effect of strong longitudinal $\vec{B}$-fields on dose from e^- and γ beams**, Med. Phys. (abstract) **19**, 816 – 817 (1992).

34. A. F. Bielajew, R. Wang, and S. Duane, **Accurate e^- transport calculations using single elastic scattering Monte Carlo**, Med. Phys. (abstract) **19**, 792 (1992).

35. B. A. Faddegon, D. W. O. Rogers, J. Sun, A. F. Bielajew, C. A. Sanders, S. S. Kubsad, and T. R. Mackie, **An EGS4 user-code Monte Carlo simulation of clinical accelerators**, Med. Phys. (abstract) **19**, 1138 (1992).

36. M. A. Holmes, T. R. Mackie, W. Sohn, A. F. Bielajew, and D. W. O. Rogers, **The OMEGA Project: The calculation of correction factors using correlated sampling and EGS4 Monte Carlo**, Med. Phys. (abstract) **19**, 809 (1992).

37. D. W. O. Rogers, K. R. Shortt, C. K. Ross, A. F. Bielajew, C.-M. Ma, and A. E. Nahum, **Corrections for vial walls and dose conversion in Fricke dosimetry**, Med. Phys. (abstract) **19**, 817 (1992).

38. G. X. Ding, D. W. O. Rogers, C. K. Ross, J. S. Wei, A. F. Bielajew, B. A. Faddegon, T. R. Mackie, P. Jursinic, and J. Deasy, **Measured vs Monte Carlo calculated electron beam dose distributions**, Med. Phys. (abs) **20**, 933 (1993).

39. G. X. Ding, D. W. O. Rogers, A. F. Bielajew, and T. R. Mackie, **Calculation of stopping-power ratios using realistic clinical electron beams**, Med. Phys. (abs) **20**, 1293 (1993).

40. G. X. Ding, D. W. O. Rogers, J. E. Cygler, J. S. Wei, and T. R. Mackie, **Fluence factors used in conversion of dose measured in plastic to dose in water**, Med. Phys. (abs) **20**, 1589 (1993).

41. C. M. Ma, D. W. O. Rogers, B. A. Faddegon, G. X. Ding, J. S. Wei, A. F. Bielajew, and T. R. Mackie, **Simplified models of electron beams from a Clinac 2100C accelerator**, Med. Phys. **20**, 1295 (abstract) (1993).

42. T. R. Mackie, P. J. Reckwerdt, C. M. Wells, M. Podgorsak, D. W. O. Rogers, G. X. Ding, B. A. Faddegon, J. Wei, A. F. Bielajew, and J. Cygler, **The OMEGA Project: Comparison Between EGS4 Monte Carlo Simulation and Dose Measurements in Standard Heterogeneous Phantoms**, Med. Phys. **20**, 934 (abstract) (1993).

43. J. S. Wei, D. W. O. Rogers, G. X. Ding, A. F. Bielajew, and T. R. Mackie, **New Capabilities in BEAM, a Code to Simulate Clinical Accelerators**, Med. Phys. (abs) **20**, 934 (1993).

44. D. Sheikh-Bagheri, D. W. O. Rogers, and T. R. Mackie, **Monte Carlo model of the 6 MV photon beam from a SL25 accelerator**, Med. Phys. **21**, 1368 (abstract) (1994).

45. A. F. Bielajew, **Exact plural and multiple elastic electron Rutherford scattering: Assessment of Molière and Keil-Zeitler-Zinn theories**, Phys. Med. Biol. (abstract) **39a**, 680 (1994).

46. J. Cygler and D. W. O. Rogers, **Monte Carlo calculations of tungsten mesh electron beam modifier**, Phys. Med. Biol. (abstract) **39a**, 677 (1994).

47. G. X. Ding, D. W. O. Rogers, and T. R. Mackie, **Calculation of electron mean energy in water using realistic electron beams**, Med. Phys. (abs) **21**, 894 (1994).

48. G. X. Ding, D. W. O. Rogers, and T. R. Mackie, **Improving electron beams in radiotherapy using Monte Carlo simulation**, Med. Phys. (abs) **21**, 900 (1994).

49. G. X. Ding, D. W. O. Rogers, and T. R. Mackie, **Calculation of backscatter into beam monitor chamber for electron beams**, Med. Phys. (abs) **21**, 923 (1994).

50. G. X. Ding, D. W. O. Rogers, and T. R. Mackie, **Electron beam spectra from different accelerators in radiotherapy**, Med. Phys. (abs) **21**, 1364 (1994).

51. C. M. Ma, D. W. O. Rogers, G. X. Ding, and T. R. Mackie, **Characterization of Realistic Electron Beams from Three Clinical Accelerators**, Med. Phys. **21**, 1367 (abstract) (1994).

52. T. R. Mackie, J. O. Deasy, P. J. Reckwerdt, C. M. Wells, D. W. O. Rogers, and J. Cygler, **The OMEGA Project: Design of a Virtual Clinical Trial to Evaluate Monte Carlo Simulation for Electron Beam Planning**, Med. Phys. **21**, 894 (abstract) (1994).

53. C. M. Ma, D. W. O. Rogers, G. X. Ding, and T. R. Mackie, **Electron beam characterization: Reconstruction models and dose distributions in a homogeneous phantom**, Med. Phys.(abs) **21**, 895 (1994).

54. G. Mackay, N. Whyte, K. Shortt, I. Thomson, C. K. Steeves, and A. Egan, **Performance of a new direct-reading extremity dosimeter**, Health Phys. Suppl. **69**, S37 (1994).

55. W. R. Nelson, A. F. Bielajew, D. W. O. Rogers, and H. Hirayama, **EGS4 in '94: A decade of enhancements**, Phys. Med. Biol. (abstract) **39a**, 669 (1994).

56. D. W. O. Rogers, **Realistic Accelerator Simulations for External Beam Radiotherapy**, Phys. Med. Biol. (abstract) **39a**, 671 (1994).

57. C. K. Ross, K. R. Shortt, N. V. Klassen, and D. W. O. Rogers, **The development of an absorbed dose to water standard and calibration service at NRC**, Phys. Med. Biol. (abstract) **39a**, 792 (1994).

58. D. W. O. Rogers, **A clinical dosimetry system based on absorbed-dose standards**, Phys. Med. Biol. (abstract) **39a**, 793 (1994).

59. D. C. Santry, **Calibration of Radionuclide Calibrators in Nuclear Medicine**, Clinical Nuclear Medicine **19**, 934 – 935 (1994).

60. H. Tölli and A. F. Bielajew, **Determination of point-source non-uniformity correction factors for cylindrical ion chambers in the vicinity of brachytherapy sources**, Phys. Med. Biol. (abstract) **39a**, 167 (1994).

61. A. F. Bielajew, **Incorporating the Livermore Photon Interaction Data Base into the electron-photon Monte Carlo transport code EGS4**, Med. Phys. (abstract) **22**, 662 (1995).

62. A. F. Bielajew, **Advances in Monte Carlo electron transport**, Radioth. and Oncol. Suppl 1 (abstract) **27**, S28 (1995).

63. M. J. Corsten and A. F. Bielajew, **Determination of point-source non-uniformity correction factors for cylindrical ion chambers in the vicinity of brachytherapy sources**, Med. Phys. (abstract) **22**, 672 – 673 (1995).

64. G. X. Ding, D. W. O. Rogers, and T. R. Mackie, **Influence of the design of an accelerator treatment head on the output factor for electron beams**, Med. Phys.(abstract) **22**, 673 (1995).

65. G. X. Ding, D. W. O. Rogers, and T. R. Mackie, **Angular distribution of clinical electron beams from various accelerators**, Med. Phys. (abs) **22**, 1007 (1995).

66. B. P. Geiser, P. J. Reckwerdt, T. R. Mackie, M. Holmes, and G. X. Ding, **BTREE vector compression applied to Monte-Carlo phase space**, Med. Phys.(abs) **12**, 1007 (1995).

67. C.-M. Ma and D. W. O. Rogers, **Monte Carlo calculated wall correction factors for plane-parallel chambers in high-energy electron beams**, Med. Phys. (abstract) **22**, 672 (1995).

68. M. S. MacPherson, C. K. Ross, and D. W. O. Rogers, **Energy calibration of the NRCC Electron linear accelerator**, Med. Phys.(abstract) **22**, 673 (1995).

69. C.-M. Ma, D. W. O. Rogers, and T. R. Mackie, **Monte Carlo investigation of the virtual point source position for electron beams from three clinical linear accelerators**, Med. Phys.(abstract) **22**, 948 (1995).

70. M. S. MacPherson, C. K. Ross, and D. W. O. Rogers, **A technique for accurate measurement of electron stopping powers**, Med. Phys. (abs) **22**, 950 (1995).

71. D. W. O. Rogers, G. X. Ding, and D. T. Burns, **R_{50} as a beam quality specifier for selecting stopping-power ratios and reference depths for electron dosimetry**, Med. Phys.(abs) **22**, 950 (1995).

72. H. Tölli and A. F. Bielajew, **Determination of non-uniformity correction factors for cylindrical ionization chambers close to ^{192}Ir brachytherapy sources**, Radioth. and Oncol. Suppl 1 (abstract) **27**, S10 (1995).

73. A. F. Bielajew and D. W. O. Rogers, **Effects of a Møller cross section error in the EGS4 code**, Med. Phys. (abstract) **23**, 1153 (1996).

74. G. Y. Fang, T. R. Mackie, M. J. Glass, P. J. Reckwerdt, and D. W. O. Rogers, **A Monte Carlo study of Tomotherapy**, Med. Phys. **23**, 1074(abstract) (1996).

75. A. S. Kirov, D. W. O. Rogers, G. M. Daskalov, and J. F. Williamson, **Secondary electron transport in brachytherapy dosimetry: Evaluation of the dose-to-kerma ratio for localized gamma sources**, Medical Physics **23**, 1056(abstract) (1996).

76. H. H. Liu, D. Sheikh-Bagheri, T. R. Mackie, and E. C. McCullough, **Effects of spatial resolution on convolution based photon dose calculation**, Med. Phys. **23**, 1156 (abstract) (1996).

77. C.-M. Ma, D. W. O. Rogers, and T. R. Mackie, **Electron beam characterization: spatial resolution and computing efficiency**, Med. Phys. **23**, 1141–1142(abs) (1996).

78. C.-M. Ma, C. W. Coffey, L. A. DeWerd, C. Liu, R. Nath, S. M. Seltzer, and J. Seuntjens, **Dosimetry of kilovoltage x-ray beams for radiotherapy**, Med. Phys. **23**, 1114 (abstract) (1996).

79. C.-M. Ma, **Characterization of Monte Carlo calculated electron beams for radiotherapy**, Radiotherapy & Oncology,(Suppl 1) **40**, S33 (abstract) (1996).

80. M. S. MacPherson, C. K. Ross, and D. W. O. Rogers, **Measured electron stopping powers for elemental absorbers**, Med. Phys. (abs) **23**, 797 (1996).

81. D. W. O. Rogers, **A new dosimetry protocol: Summary**, Med. Phys. **23**, 1124(abstract) (1996).

82. D. Sheikh-Bagheri and D. W. O. Rogers, **Variance reduction by selective bremsstrahlung splitting**, Med. Phys. **23**, 808 (abstract) (1996).

83. D. Sheikh-Bagheri and D. W. O. Rogers, **Derivation of the incident electron parameters in photon beam Monte Carlo simulations**, Med. Phys. (abstract) , 1165 (1999).

84. J. P. Seuntjens, K. R. Shortt, C. K. Ross, C. M. Ma, and D. W. O. Rogers, **Measurement of beam quality factors k_Q for cylindrical ionization chambers in high energy photon beams**, Med. Phys. (abstract) **23**, 1071 (1996).

85. J. Seuntjens, N. V. Klassen, and D. C. Marchington, **Construction of a 4 ^{o}C sealed water calorimeter for measuring absorbed dose in high energy photon and electron beams**, Med. Phys. **23**, 805 (abstract) (1996).

86. K. R. Shortt, A. F. Bielajew, C. K. Ross, M. J. Corsten, J. T. Burke, P. R. S. Howard, and D. C. Marchington, **Determination of A_{wall} corrections using a non-linear extrapolation to zero-wall thickness**, Med. Phys. (abstract) **23**, 1139 (1996).

87. K. R. Shortt, C. K. Ross, and I. Janovsky, **Sensitivity of LiF TLD-100 Irradiated by ^{60}Co and ^{137}Cs Gamma Rays**, Health Physics(abstract) **70**, 526 (1996).

88. D. Sheikh-Bagheri, D. W. O. Rogers, and T. R. Mackie, **Monte Carlo study of dose distribution of the 20 MV photon beam of the NRCC linac**, Med. Phys. **23**, 1129 (abstract) (1996).

89. G. G. Zhang, D. W. O. Rogers, J. Cygler, and T. R. Mackie, **Monte Carlo Calculated Electron Beam Output Factors vs Cutout Size**, Med. Phys. (abs) **23**, 1154 (1996).

90. A. F. Bielajew and I. Kawrakow, **High Accuracy Monte Carlo Calculations**, J. Intl. Fed. Med. Biol. Engin. **35**, Suppl 2, 1096 (1997).

91. I. Kawrakow, **State-of-the-art Monte Carlo techniques for radiation treatment dose calculations**, J. Intl. Fed. Med. Biol. Engin. **35**, Suppl 2, 1102 (1997).

92. I. Kawrakow, **On the condensed history technique for the simulation of electron elastic scattering**, Radiation Physics and Chemistry (abstract) **53**, 345 – 352 (1997).

93. G. Mora and D. W. O. Rogers, **Monte Carlo calculation of the beam output factors for a typical ^{60}Co therapy source**, J. Intl. Fed. Med. Biol. Engin. **35**, Suppl 2, 1105 (1997).

94. J. P. Seuntjens, C. K. Ross, K. R. Shortt, and N. V. Klassen, **Energy dependence of the radiation chemical yield of the Fricke dosimeter in high energy photon beams**, Med. Phys. **24**, (abstract) (1997).

95. K. R. Shortt, C. K. Ross, N. V. Klassen, and J. P. Seuntjens, **The Canadian primary standard of absorbed dose to water: Its history and present status**, Med. Phys. **24**, (abstract) (1997).

96. N. G. Tarr, G. F. MacKay, I. Thomson, and K. Shortt, **A floating gate MOSFET dosimeter requiring no external bias supply**, 4th Euorpean Conference on Radiations and their Effects on Devices and Systems , Abs G.2 (1997).

97. A. Tsechanski, A. F. Bielajew, S. Faermann, and Y. Krutman, **A target port for high quality portal imaging in linear accelerators**, J. Intl. Fed. Med. Biol. Engin. **35**, Suppl 2, 1064 (1997).

98. G. G. Zhang, D. W. O. Rogers, J. Cygler, and T. R. Mackie, **Monte Carlo Calculated Electron Beam Applicator Gap Factors vs SSD**, Med. Phys. (abs) **24**, 1049 (1997).

99. G. G. Zhang, D. W. O. Rogers, J. Cygler, and T. R. Mackie, **Corrections for Electron Beam Output Due to Stopping-Power Ratio Change vs $d_{\max}$ and Field Size**, Med. Phys. (abs) **24**, 1201 (1997).

100. J. Borg, J. P. Seuntjens, and D. W. O. Rogers, **Monte Carlo calculations of fluence spectra in air for several ^{192}Ir source configurations**, Med. Phys. **25**, 1084 (abstract) (1998).

101. G. M. Daskalov, J. F. Williamson, R. Baker, and D. W. O. Rogers, **Dosimetric Modeling of the MicroSelectron High-Dose Rate Ir-192 Source by the Multigroup Discrete Ordinates Method**, Medical Physics(abstract) **25**, A119 (1998).

102. G. M. Daskalov, R. Baker, J. F. Williamson, and D. W. O. Rogers, **Multigroup discrete ordinates modeling of I125 6702 see dose distributions using a broad energy-group, cross-section representation**, Med.Phys. (abstract) **26**, 1141 (1999).

103. M. S. MacPherson, C. K. Ross, and D. W. O. Rogers, **Accurate Measurements of the Collision Stopping Powers for 5 to 30 MeV Electrons**, Med. Phys. (abs) **25**, A104 (1998).

104. D. W. O. Rogers, C. K. Ross, J. P. Seuntjens, and K. R. Shortt, **Rationale for a new dosimetry protocol in Canada**, Med. Phys. **25**, 1072 (1998).

105. D. W. O. Rogers, **Dosimetry based on absorbed-dose calibration factors**, **48 (Suppl 1)**, S24 (abstract) (1998).

106. K. Shortt and J. Shobe, **Comparison of Dosimetry Calibration Services at the NRCC and NIST**, Med. Phys. (abstract) **25**, 1579 (1998).

107. J. P. Seuntjens, I. Kawrakow, and C. K. Ross, **Natural convection in sealed water calorimeters operated at 22°C**, Med. Phys.(abstract) **25**, 1580 (1998).

108. C. L. Yang, D. W. O. Rogers, and J. P. Seuntjens, **Calculation of photon beam quality specifiers**, Med. Phys. , 1085 (abstract) (1998).

109. G. G. Zhang, D. W. O. Rogers, and J. E. Cygler, **Monte Carlo Investigation of electron beam relative output factors**, Med. Phys. (abstract) (1998).

110. P. R. Almond, P. J. Biggs, B. M. Coursey, W. F. Hanson, M. S. Huq, R. Nath, and D. W. O. Rogers, **The AAPM's TG–51 Protocol for Clinical Reference Dosimetry of High-Energy Beams**, Med. Phys.(abstract) **26**, 1058 (1999).

111. J. Borg, J. P. Seuntjens, I. Kawrakow, and D. W. O. Rogers, **Monte Carlo study of cavity theory at low energies**, Med. Phys. (abstract) **26**, 1426 (1999).

112. J. P. Seuntjens, I. Kawrakow, and D. W. O. Rogers, **Accuracy tests of the new EGSnrc Monte Carlo system in the simulation of ion chamber response in low energy photon beams**, Med. Phys. (abstract) **26**, 1121 (1999).

113. K. R. Shortt, C. K. Ross, J. P. Seuntjens, F. Delaunay, P. Gross, E. Leroy, and A. Ostrowsky, **Comparison of dose standards for linac photon beams at NRC Canada and LPRI France**, Med. Phys. (abstract) **26**, 1103 (1999).

114. K. R. Shortt, **Five dosimetric comparisons at Cobalt-60 energy involving NRC in 1998**, Med. Phys. (abstract) **26**, 1427 (1999).

115. C. L. Yang, D. W. O. Rogers, K. R. Shortt, and L. Van der Zwan, **Ion recombination in ion chambers in continuous radiation**, Med. Phys. (abstract) , 1418 (1999).

116. J. Borg, I. Kawrakow, D. W. O. Rogers, and J. P. Seuntjens, **Experimental verification of EGSnrc Monte Carlo Calculated Ion Chamber Response in Low Energy Photon Beams**, Med. Phys. **27**, 1445 (abstract) (2000).

117. M. Fippel, M. Alber, M. Birkner, W. Laub, F. Nüsslin, and I. Kawrakow, **Inverse treatment planning for radiation therapy based on fast Monte Carlo dose calculation**, in *Programme of the Monte Carlo 2000 Meeting Lisbon*, pages 62 – 63, Oliveira and Kling, ITN, Lisboa, 2000.

118. I. Kawrakow and D. W. O. Rogers, **The EGSnrc System, a status report**, in *Programme of the Monte Carlo 2000 Meeting Lisbon*, pages 33 –34, Oliveira and Kling, ITN, Lisboa, 2000.

119. I. Kawrakow, **VMC^{++}, electron and photon Monte Carlo calculations optimized for Radiation Treatment Planning**, in *Programme of the Monte Carlo 2000 Meeting Lisbon*, page 67, Oliveira and Kling, ITN, Lisboa, 2000.

120. D. W. O. Rogers, **Monte Carlo techniques for primary standards of ionizing radiation and for dosimetry protocols**, in *Programme of the Monte Carlo 2000 Meeting Lisbon*, pages 76 – 77, Oliveira and Kling, ITN, Lisboa, 2000.

121. I. Kawrakow, **Cavity theory revisited**, in *Recent developments in accurate radiation dosimetry, Proc. of an Int'l Workshop*, edited by J. P. Seuntjens and P. Mobit, page 5, Medical Physics Publishing, Madison WI, 2002.

122. J. Deasy, E. Lee, I. Kawrakow, and C. Zakarin, A Prototype Monte Carlo based IMRT Treatment Planning Research System, Med.Phys. (abstract) , 1254 (2002).

123. I. Kawrakow, Electron impact ionization cross sections for EGSnrc, Med.Phys. (abstract) , 1230 (2002).

124. I. Kawrakow, Smoothing Monte Carlo calculated dose distributions for Radiation Treatment planning, Med.Phys. (abstract) , 1352 (2002).

125. E.-M. Hing, D. W. O. Rogers, and I. Kawrakow, On the accuracy of current methods for calibrating Ir-192 HDR brachytherapy sources, Med.Phys. (abstract) , 1319 (2002).

126. B. Walters, I. Kawrakow, and D. W. O. Rogers, History by history statistical estimators in the BEAM code system, Med.Phys. (abstract) , 1352 (2002).

127. I. Kawrakow, The effect of Monte Carlo statistical uncertainties on the evaluation of dose distributions in radiation treatment planning, Med.Phys. (abstract) , 1451 (2003).

128. E. Lee, J. Deasy, I. E. Naqa, I. Kawrakow, and I. Vicic, Integrating a Monte Carlo based optimization module into CERR for designing IMRT plans, Med.Phys. (abstract) , 1491 (2003).