

### SPECIAL ISSUE ON THE 11TH INTERNATIONAL CONFERENCE ON RADIATION SHIELDING AND THE 15TH TOPICAL MEETING OF THE RADIATION PROTECTION AND SHIELDING DIVISION (PART 1)

- 1 Foreword: Special Issue on the 11th International Conference on Radiation Shielding and the 15th Topical Meeting of the Radiation Protection and Shielding Division / *Rebecca M. Howell, Nolan E. Hertel*

## DETECTORS

### TECHNICAL PAPERS

- 5 Response of Ionization Chambers to High-Energy Monoenergetic Neutrons / *H. Vincke, D. Forkel-Wirth, H. G. Menzel, S. Roesler, C. Theis, M. Widorski, K. Hatanaka, H. Yashima, T. Nakamura, S. Taniguchi, N. Nakao, A. Tamii*
- 11 Feasibility Study of a Monolithic Silicon Telescope for BNCT Applications / *S. Agosteo, A. Fazzi, G. D'Angelo, M. V. Introini, A. Pola, C. Pirovano, V. Varoli, S. Altieri, S. Stella, S. Bortolussi, P. Bruschi*
- 17 Use of Portable Gamma Spectrometers for Identifying Persons Exposed in a Nuclear Criticality Event / *K. G. Veinot, B. T. Gose, T. G. Davis, J. S. Bogard*
- 21 Design, Construction, and Implementation of Spherical Tissue-Equivalent Proportional Counter / *Delia Perez-Nunez, Leslie A. Braby*
- 29 Simulation of the Charge Produced by Protons Inside a Tissue Equivalent Ionization Chamber in a Mixed Neutron/Gamma Field in BNCT / *Antoaneta Roca, Yuan-Hao Liu, Ray Moss, Finn Stecher-Rasmussen, Sander Nievaart*
- 35 Continuous Air Monitor Algorithm Development / *Robert B. Hayes*
- 41 Evaluation of a Closed-End Coaxial High-Purity Germanium Cylindrical Detector Efficiency Using a Simplified Geometrical Approach / *Mahmoud I. Abbas*
- 45 Characterization of a Detection System for an Anthropomorphic Phantom Designed to Measure the Effective Dose for Photon Fields / *J. Darréon, C. Villagrassa, I. Clairand, L. Donadille, F. Queinnec, J-M. Fontbonne, J. Colin, D. Cussol, M. Labalme*
- 50 A Design Study for a New Neutron Counter Based on an Annular Tube-Type  $^3\text{He}$  Detector Through a Monte Carlo Simulation / *H. S. Shin, J. S. Joo, K. J. Park, T. H. Lee, J. H. Jung, C. Y. Lee, H. D. Kim*
- 55 CIS: A GUI-Based Software System for Monte Carlo Simulation of Compton Camera / *Se Hyung Lee, Hee Seo, Jin Hyung Park, Sung Ho Park, Jae Sung Lee, Ju Hahn Lee, Chun Sik Lee, Chan Hyeong Kim*

(Continued)

# CONTENTS / OCTOBER 2009—VOL. 168, NO. 1

(Continued)

- 61** RadTrac: A System for Detecting, Localizing, and Tracking Radioactive Sources in Real Time / *R. Vilim, R. Klann*
- 74** Wall Correction Factors Estimated by Monte Carlo Calculation for Spherical Graphite-Walled Cavity Chambers in INER's  $^{60}\text{Co}$  Air-Kerma Standard / *Yi-Chun Lin, Shi-Hwa Su, Hui-Yu Tsai, Shiang-Huei Jiang*
- 79** Current State of Commercial Radiation Detection Equipment for Homeland Security Applications / *Raymond T. Klann, Jason Shergur, Gary Mattesich*

## TECHNICAL NOTE

- 89** Preliminary Study for Determination of Distal Dose Edge by Measuring 90-deg Prompt Gammas with an Array-Type Prompt Gamma Detection System / *Chul Hee Min, Jang Guen Park, Chan Hyeong Kim*

## DOSE/DOSE RATE

### TECHNICAL PAPERS

- 95** The Coupling of a Deterministic Transport Field Solution to a Monte Carlo Boundary Condition for the Simulation of Large Gamma-Ray Spectrometers / *Mark W. Shaver, L. Eric Smith, Richard T. Pagh, Erin A. Miller, Richard S. Wittman*
- 101** Study of the Site Dose Rate for the ISFSI Facility with Monte Carlo and Deterministic Methods / *Jeng-Ning Wang, Chung-Hsin Lu, Kuo-Wei Lee, Uei-Tyng Lin, Shiang-Huei Jiang*
- 108** Reducing Stray Radiation Dose for a Pediatric Patient Receiving Proton Craniospinal Irradiation / *Phillip J. Taddei, Dragan Mirkovic, Jonas D. Fontenot, Annelise Giebel, Yuanhui Zheng, Uwe Titt, Shiao Woo, Wayne D. Newhauser*
- 113** The Recent Improvement and Verification of DARWIN: Development of a New DAQ System and Results of Flight Experiment / *Tatsuhiko Sato, Daiki Satoh, Akira Endo, Nobuhiro Shigyo, Hiroshi Yasuda, Masashi Takada, Kazuaki Yajima, Takashi Nakamura*
- 118** TEPC Measurements and Monte Carlo Calculations for Evaluating Ambient Dose Equivalent Response in Mixed Radiation Fields Around the Shielded Area of a Carbon Ion Accelerator / *S. Rollet, P. Beck, M. Latocha, M. Wind, A. Zechner, G. C. Taylor*
- 123** Secondary Doses in Anthropomorphic Phantoms Irradiated with Light Ion Beams / *Martha Hultqvist, Irena Gudowska*
- 128** Improvement of the Equivalent Sphere Model for Space Radiation Environments / *Z. W. Lin*
- 132** Decay Gamma Dose Rates in the EVEDA Accelerator: Impact of the Deuteron Loss Uncertainties in Accelerator Maintenance / *M. García, J. Sanz, P. Sauvan, F. Ogando, D. López, A. Mayoral, V. Blideanu, C. Moreno*
- 139** Measurement of Gamma and Neutron Dose from the Operation of the ANKA Storage Ring / *Ingrid Birkel*

(Continued)

# CONTENTS / OCTOBER 2009—VOL. 168, NO. 1

(Continued)

- 144** Evaluation of Skyshine Dose for the Proton Accelerator Facility of the Proton Engineering Frontier Project in Korea / *Cheol Woo Lee, Young-Ouk Lee, Young-Sik Cho*
- 149** Assessment of the Effective Dose in Neutron-Irradiated Workplaces Within an Anthropomorphic Phantom / *C. Villagrassa, J. Darréon, I. Clairand, F. Quéinnec*
- 154** Interspecies Scaling of Self-Organ Doses from a Voxel Mouse to Voxel Humans / *Sakae Kinase, Shinpei Matsuhashi, Kimiaki Saito*
- 158** Development of Point-Kernel Code for Skin Dose Calculation / *Sang-Hyun Park, Boyeol Choi, Jai-Ki Lee*
- 164** Monte Carlo Assessments of Absorbed Doses to the Hands of Radiopharmaceutical Workers Due to Photon Emitters / *Dan Ilas, Keith Eckerman, Sami Sherbini, Harriet Karagiannis*
- 169** Validation of Monte Carlo Simulation of a Thyroid Uptake System Using Various Sources and a Slab Phantom / *Sarah Scarboro, Nolan Hertel, Eric Burgett, Rebecca Howell, Armin Ansari*
- 173** Ambient Dose Equivalent Versus Effective Dose for Quantifying Stray Radiation Exposures to a Patient Receiving Proton Therapy for Prostate Cancer / *Jonas D. Fontenot, Phillip Taddei, Yuanshui Zheng, Dragan Mirkovic, Wayne D. Newhauser*

## TECHNICAL NOTE

- 178** Forecasting the Dose and Dose Rate from a Solar Particle Event Using Localized Weighted Regression / *T. F. Nichols, L. W. Townsend, J. W. Hines*

## DOSIMETRY

### TECHNICAL PAPERS

- 185** Study of a Solid-State Microdosimeter Based on Micrometric-Size Diodes Coupled to a Residual Energy Measurement Stage / *S. Agosteo, A. Fazzi, G. D'Angelo, M. V. Introini, A. Pola, C. Pirovano, V. Varoli*
- 191** A Characterization Study of GafChromic EBT Film as a Two-Dimensional Dosimeter / *Ming-Chen Hsiao, Shiang-Huei Jiang*
- 196** Feasibility Study into the Use of an Aluminum Ionization Chamber as a Gamma Dosimeter in a Mixed Neutron and Gamma-Ray Field / *Antoaneta Roca, Yuan-Hao Liu, Ray Moss, Finn Stecher-Rasmussen, Sander Nievaart*
- 202** The Application of Micropatterned Devices for Radiation Protection Dosimetry and Monitoring / *A. J. Waker, J. Dubeau, R. A. Surette*

## PHANTOMS

### TECHNICAL PAPERS

- 209** Development of Female ATOM-MIRD Hybrid Voxel Model for Monte Carlo Dose Calculations / *Sungkoo Cho, Il Hyuk Yang, Jong Hwi Jeong, Chan Hyeong Kim*

(Continued)

# CONTENTS / OCTOBER 2009—VOL. 168, NO. 1

(Continued)

- 213** Recent Progress on Japanese Voxel Phantoms and Related Techniques at JAEA / *Kimiaki Saito, Kaoru Sato, Akira Endo, Sakae Kinase*
- 220** OEDIPE: Software for Fast Construction of Computational Phantoms and MCNPX Calculation in Internal Dosimetry / *S. Lamart, C. Robert, E. Blanchardon, A. Molokanov, X. Lechaftois, D. Broggio, A. Desbrée, D. Franck*
- 227** Development of Deformable Computational Model for Korean Adult Male Based on Polygon and NURBS Surfaces / *Jong Hwi Jeong, Sungkoo Cho, Choonsik Lee, Kun-Woo Cho, Chan Hyeong Kim*
- 231** High-Energy Computer Tomography Measurements in a Museum and Analysis of the Radioprotection Problem / *A. Berdondini, M. Bettuzzi, R. Brancaccio, F. Casali, N. Lanconelli, M. P. Morigi*
- 235** Phantom Development for Constancy and Acceptance Test for Digital Radiographic Equipment / *P. Mayo, F. Rodenas, J. M. Campayo, A. Pascual, B. Marín, G. Verdú*

## TECHNICAL NOTE

- 238** Image Quality Assessment of Digital Dental Radiography Systems with Specifically Developed Phantom and Software / *P. Mayo, F. Rodenas, J. M. Campayo, A. Pascual, B. Marín, G. Verdú*

## RADIOGRAPHY

### TECHNICAL PAPERS

- 245** Radiographic Capabilities of the MERCURY Monte Carlo Code / *M. Scott McKinley, Alexis E. Schach von Wittenau*
- 249** Algorithm to Simulate Increased Noise in Computed Radiography / *B. Juste, J. I. Villaescusa, R. Tortosa, G. Verdú*