CP-2017

The 6th International Workshop on Computational Human Phantoms

Preliminary Program

8/18/17

Sunday, August 27, 2017

4:00 - 8:30 pm	*Registration*
6:30 - 8:30 pm	*Workshop Reception*

Monday, August 28, 2017

7:30 am - 5:30 pm	*Registration & Information Desk*
7:30 - 8:30 am	*Breakfast*

Plenary Session 1

Session Chair: *Benjamin M. W. Tsui, Ph.D., Johns Hopkins University, Baltimore, MD, USA*

8:30 – 8:40 am	*Opening remarks*	*Benjamin M. W. Tsui, Ph.D.*	*Johns Hopkins University, Baltimore, MD, USA*
8:40 - 9:30 am	*A Review of computational human phantoms for radiation dosimetry*	*X. George Xu, Ph.D.[1,2]*	*[1] Nuclear Engineering Program, Rensselaer Polytechnic Institute, Troy, New York, USA. [2]School of Nuclear Science and Technology, University of Science and Technology of China, Hefei, China,*

Monday Scientific Session #11: *Phantom Development I*

Session Chair: *Benjamin M. W. Tsui, Ph.D., Johns Hopkins University, Baltimore, MD, USA*
Session Co-Chair: *George Xu, Ph.D., Rensselaer Polytechnic Institute, Troy, New York, USA*

9:30 - 9:45 am	Paper #111 - 052	Incorporation of a Finite-Element Cardiac Model into the 4D XCAT Phantom Capable of Simulating Variations in Anatomy and Function	W. Paul Segars[1] , Alexander I. Veress[2] , Gregory M. Sturgeon[1] , and Ehsan Samei[1]	[1]Carl E. Ravin Advanced Imaging Laboratories, Duke University, NC, Durham, USA; [2]Department of Mechanical Engineering, University of Washington, Seattle, WA 98195 USA
9:45 - 10:00 am	Paper #112 - 024	Establishment of detailed respiratory tract model and Monte Carlo simulation of radon progeny caused dose	Hongyu Zhu[1,2,3] , Rui Qiu[1,2.3] ,Yuxi Pan[1,2,3] , Zhen Wu[4] , Chunyan Li[4] , Junli Li[1,2,3*]	[1]Department of Engineering Physics, Tsinghua University, Beijing, China [2]Key Laboratory of Particle & Radiation Imaging (Tsinghua University), Ministry of Education, Beijing, China [3]Key Laboratory of High Energy Radiation Imaging Fundamental Science for National Defense, Beijing, China [4]Nuctech Company Limited, Beijing, China

10:00 - 10:15 am	Paper #113 - 027	Realistic 3D Glandular Texture Properties in an Anthropomorphic Digital Breast Phantom	Christian G. Graff*§	*Division of Imaging, Diagnostics, and Software Reliability, Center for Devices and Radiological Health, FDA Silver Spring, MD USA
10:15 - 10:30 am	Paper #114 - 012	OpenVCT: A draft framework for anthropomorphic phantom research	Andrew D. A. Maidment[1,*],Bruno Barufaldi[1], Predrag R. Bakic[1],David Higginbotham[1],David Pokrajac[2], Ali Avanaki[3], Katherine Espig[3], Albert Xthona[3], and Tom Kimpe[4]	[1,*]Dept. of Radiology, University of Pennsylvania, Philadelphia PA, USA. [2]Dept of Computer Science, Delaware State University, Dover DE, USA. [3]Barco Inc., Portland OR, USA, [4]Barco NV, Kortrijk, Belgium

10:30 - 11:00 am	***Coffee Break***

Monday Scientific Session #12: *Phantom Development II*

Session Chair: *W. Paul Segars, Ph.D., Duke University, Durham, NC, USA*
Session Co-Chair: *Junli Li, Ph.D., Tsinghua University, Beijing, China*

Invited Talk

11:00 - 11:30 am	***Latest development and applications of the Chinese reference phantoms***	***Junli Li, Ph.D.***	***Tsinghua Univ., Beijing, China***

11:30 - 11:45 am	Paper #121 - 049	Constructing patient-specific physiological texture phantoms for use in personalized cancer therapy	Nick Henscheid*§, Harrison Barrett†	*Program in Applied Mathematics, University of Arizona Tucson, Arizona, †College of Optical Sciences, University of Arizona Tucson, Arizona
11:45 am - 12:00 pm	Paper #122 - 010	Validation of PIMAL 3.0 – Phantom wIth Moving Arms and Legs	Keith T. Griffin[1,2*] and Michael B. Bellamy[1]	[1,*] Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN. [2]Division of Cancer Epidemiology and Genetics, National Cancer Institute, National Institutes of Health, Rockville, MD
12:00 - 12:15 pm	Paper #123 -016	Posture Change of Mesh-Type Computational Phantoms Using As-Rigid-As-Possible Shape Deformation Algorithm	Yeon Soo Yeom[1], Heagin Han[1], Chansoo Choi[1], Thang Tat Nguyen[1], Hanjin Lee[1], Min Cheol Han[1], Bangho Shin[1], Chan Hyeong Kim[1,]	[1,*]Department of Nuclear Engineering, Hanyang University, 222 Wangsimni-ro, Seongdong-gu, Seoul, 04763, Korea
12:15 - 12:30 pm	Paper #124 - 031	A Computational Method for Voxel to Mesh Phantom Conversion	Justin L Brown* §, Takuya Furuta† , and Wesley E. Bolch*	* J. Crayton Pruitt Family Department of Biomedical Engineering, University of Florida Gainesville, Florida, USA †Nuclear Science and Engineering Center, Japan Atomic Energy Agency 2-4 Shirakata, Tokai-mura, Ibaraki 319-1195, Japan

12:30 - 2:00 pm	***Lunch***

Monday Scientific Session #13: *Biomedical Imaging Applications I*

Session Chair: *Michael A. King, Ph.D., University of Massachusetts, Worcester, MA, USA*
Session Co-Chair: *Joseph Y. Lo, Duke University, Durham, NC, USA*

Invited Talk

2:00 - 2:30 pm	***Virtual Clinical Trials using Patient-based Computational Breast Phantoms***	***Joseph Y. Lo*[1], Jayasai Rajagopal[1], Stephen J. Glick[2], and W. Paul Segars[1]***	*[1]Carl E. Ravin Advanced Imaging Laboratories, Dept of Radiology, and Medical Physics Graduate Program, Duke University, Durham, NC. [2] Division of Imaging, Diagnostics, and Software Reliability,*

				Office of Science and Engineering Laboratories, Center for Diagnostic and Radiological Health, FDA

2:30 - 2:45 pm	Paper #131 - 018	Image Generation of Extra-Phase of 4DCT to Reflect Irregular Respiratory Motion of Patient	Hyun Su Lee[1], Min Cheol Han[1], Yeon Soo Yeom[1], Thang Tat Nguyen[1], Chansoo Choi[1], Chan Hyeong Kim[1,*], Seonghoon Kim[2], Sang Hyoun Choi[3], Soon Sung Lee[3], Jina Kim[4], JinHo Hwang[4], Youngnam Kang[5]	[1,*]Department of Nuclear Engineering, Hanyang University, Seoul 04763, Republic of Korea. [2]Department of Radiation Oncology, College of Medicine, Hanyang University, Seoul 04763, Republic of Korea. [3]Department of Radiation Oncology, Korea Institute of Radiological and Medical Sciences, Seoul 01812, Republic of Korea. [4]Department of Biomedicine & Health Sciences, The Catholic University of Korea, Seoul 06591, Republic of Korea [5]Department of Radiation Oncology, Seoul St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Seoul 06591, Republic of Korea
2:45 - 3:00 pm	Paper #132 - 030	Moving-blocker Based 4D Cone-beam Computed Tomography: A Phantom Study	Cong Zhao , Yuncheng Zhong , Jing Wang , and Mingwu Jin*	[1,*]Department of Physics, University of Texas at Arlington, Texas, USA [2.] Department of Radiation Oncology, University of Texas Southwestern Medical Center, Texas, USA
3:00 - 3:15 pm	Paper #133 - 043	A Monte Carlo study of proton beam imaging for lung tumor using patient-specific 4DCT data	Wanli Huo[1*,2] , Townsend Zwart[3] , James Cooley[3] , Mark Jones[3] , Caitlin Finley[1] , Ken Jee[1] , Greg Sharp[1] , Stanley Rosenthal[3] , George Xu[2,4] , Hsiao-Ming Lu[1]	[1,*]. Department of Radiation Oncology, Massachusetts General Hospital, Boston, Massachusetts, USA [2.]School of Nuclear Science and Technology, University of Science and Technology of China, Hefei, China [3.]Mevion Medical Systems Inc, Littleton, Massachusetts, USA [4.]Nuclear Engineering Program, Rensselaer Polytechnic Institute, Troy, New York, USA
3:15 - 3:30 pm	Paper #134 - 032	Zero motion blur Adjustable Clinical Heart (ZACH) phantom	Katsuyuki Taguchi[1,*], Masafumi Kidoh[1,2], Zeyang Shen[1,3], Yuki Suzuki[1,4,5], Stefan L. Zimmerman[1], Okkyun Lee[1], Luisa Ciuffo[1], Hiroshi Ashikaga[1], George S. K. Fung[1], Yoshito Otake[5], Joao A. C. Lima[1], Takahiro Higuchi[6,7], Yoshinobu Sato[5], Lewis C. Becker[1], and Elliot K. Fishman[1]	[1,*.]The Johns Hopkins University, Baltimore, U.S.A. [2.]Kumamoto University, Kumamoto, Japan. [3.]Southeast University, Nanjing, China. [4.]Osaka University, Osaka, Japan. [5.]Nara Advanced Institute of Science and Technology, Nara, Japan. [6.]Univeristy of Würzburg, Würzburg, Germany. [7.]National Cerebral and Cardiovascular Center, Suita, Japan

3:30 - 4:00 pm	***Coffee Break, Group Photo***

Monday Scientific Session #14: *Dosimetry Applications I*

Session Chair: *Eric C. Frey, Ph.D., Johns Hopkins University, Baltimore, USA*
Session Co-Chair: *Niels Kuster, Ph.D., IT'IS, Switzerland*

Invited Talk

4:00 - 4:30 pm	***Latest Development of Achieving Personalized Functionalized Models within Minutes***	***Niels Kuster, Ph.D.***	***IT'IS, Switzerland***

4:30 - 4:45 pm	Paper #141 - 038	Conceptual basis of dose monitoring in radiological imaging using personalized computational models	Tianwu Xie[1] and Habib Zaidi [1,2]*	[1] Department of Medical Imaging and Information Sciences, Geneva University Hospital, CH-1211 Geneva 4, Switzerland [2] Department of Nuclear Medicine and Molecular Imaging, University Medical Center Groningen, Groningen, Netherlands
4:45 - 5:00 pm	Paper #142 - 017	Calculation of organ dose conversion coefficients for radiation exposure from medical diagnostic imaging	Tianwu Xie[1] and Habib Zaidi [1,2]*	[1] Department of Medical Imaging and Information Sciences, Geneva University Hospital, CH-1211 Geneva 4, Switzerland [2] Department of Nuclear Medicine and Molecular Imaging,

				University Medical Center Groningen, Groningen, Netherlands
5:00 - 5:15 pm	Paper #143 -026	Transitional Epithelium of Urinary Bladder – Dosimetric Data for Cells at Risk	K.F. Eckerman and K. G. Veinot	Easterly Scientific, 6412 Westminster Rd., Knoxville, TN 37919
5:15 - 5:30 pm	Paper #144 - 003	Fast Monte Carlo Source Modeling and Dose Calculation For Magnetic-Resonance Imaging-Guided Radiation Therapy (MRIgRT)	Tianyu Liu[1], Hui Lin[1], Bryan Bednarz[2], Chengyu Shi[3], Xiaoli Tang[3], and X. George Xu[1,4]	[1]Nuclear Engineering Program, Rensselaer Polytechnic Institute, Troy, New York, USA. [2]Medical Physics, University of Wisconsin, Madison, Wisconsin, USA. [3]Memorial Sloan Kettering Cancer Center, New York, USA. [4]University of Science and Technology of China, Hefei, China

5:30 - 6:00 pm	***Free Time***

6:00 - 6:45 pm	***Social (Cash Bar)***
6:45 - 8:45 pm	***Banquet***

Tuesday, August 29, 2017

7:30 am - 5:30 pm	**Registration & Information Desk**
7:30 - 8:30 am	***Breakfast***

Plenary Session 2

Session Chair: *Wolfgang Kainz, Ph.D., CDRH, FDA, USA*

8:30 - 9:15 am	***Development and Use of Computational Human Phantoms: Strengths and Challenges from the Perspective of a Regulatory Agency***	***Christian Graff, Ph.D.***	***CDRH, FDA, USA***

Tuesday Scientific Session #21: *Regulatory Applications*

Session Chair: *Wolfgang Kainz, Ph.D., CDRH, FDA, USA*
Session Co-Chair: *Christian Graff, Ph.D., CDRH, FDA, USA*

9:15 - 9:30 am	Paper #211 - 001	EURADOS Intercomparison on the Usage of the ICRP/ICRU Adult Reference Computational Phantoms	Maria Zankl[1,*], Christelle Huet[2], David Broggio[2], José-María Gómez Ros[3], Lara Struelens[4], Jan Jansen[5], Jon Eakins[5], Tomas Vrba[6], and Uwe Reichelt[7]	[1,*]Institute of Radiation Protection, Department of Radiation Science, Helmholtz Zentrum München – German Research Center for Environmental Health (HMGU), Neuherberg, Germany. [2]Institut de Radioprotection et de Sûreté Nucléaire, Fontenay-aux-Roses, France. [3]CIEMAT – Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas, Madrid, Spain. [4]Research in Dosimetric Applications, SCK•CEN – Belgian Nuclear Research Centre, Mol, Belgium. [5]Public Health England, Chilton, UK. [6]Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague, Prague, Czech Republic. [7]Technical University Dresden, Dresden, Germany
9:30 - 9:45 am	Paper #212 - 009	Model Registration: A Tool for Studying	Bryn Lloyd, Alessandro Alaia, Ilaria	IT'IS Foundation, Zurich, Switzerland

		Anatomical Variability and Personalizing Phantoms	Liorni, Niels Kustery	yDepartment of Electrical Engineering, ETH Zurich, Zurich, Switzerland
9:45 - 10:00 am	Paper #213 - 041	Advancing the XCAT Phantom for image quality based research in medical imaging	Ehsan Abadi [1,*], W. Paul Segars[1], Gregory M. Sturgeon[1], Brian Harrowood[1], Anuj Kapadia[1], and Ehsan Samei[1]	[1] Carl E. Ravin Advanced Imaging Laboratories, Duke University, NC, Durham, USA
10:00 - 10:15 am	Paper #214 - 036	Task-Based Evaluation of Image Reconstruction Methods For Diverse Perfusion Defects and Reduced Doses in Myocardial Perfusion SPECT	Taek-Soo Lee and Benjamin M. W. Tsui	Dept. of Radiology and Radiological Sciences, Johns Hopkins University, Baltimore, MD, USA

10:15 - 11:35 am	***Coffee Break***
10:35 - 11:00 am	***Stroll to Naval Academy Visitor Center***
11:00 - 11:15 am	***Security check & Admission to Naval Academy Visitor Center (*** Proper ID required ***)***
11:15 - 11:30 am	***Tour Visitor Center***
11:30 am - 1:00 pm	***Naval Academy Tour***
1:00 - 2:30 pm	***Stroll Back to Lowes Hotel and lunch***

Tuesday Scientific Session #22: *Biomedical Imaging Applications II*

Session Chair: *Grant T. Gullberg, Ph.D., University of California, San Francisco*
Session Co-Chair: *David Broggio, Ph.D., IRSN, France*

Invited Talk

2:30 - 3:00 pm	***Numerical calibration for in vivo-monitoring: lessons of inter-comparison and training from the EURADOS network***	***David Broggio, Ph.D.***	***IRSN, France***

3:00 - 3:15 pm	Paper 221 - 007	Radiologist Phantom With A High-Resolution Eye Model for Interventional Radiology Simulation	Li Mao, Tianyu Liu, Hui Lin, Peter F. Caracappa, Yiming Gaoy, Lawrence T. Dauery, and X. George Xuzx	Nuclear Engineering Program, Rensselaer Polytechnic Institute, Troy, New York, USA. y Memorial Sloan Kettering Cancer Center, New York, USA. z University of Science and Technology of China, Hefei, China
3:15 - 3:30 pm	Paper #222 - 034	Multi-Pinhole Brain-SPECT: Design and Simulation of imaging with XCAT phantoms	Kesava Kalluri[1*], Timothy Fromme[1], Justin Goding[1], Yulun He[1], Arda Konik[1], Soumyanil Banerjee[1], George Zubal[2], Lars Fruenlid[3] and Michael A. King[1]	[1]Dept. of Radiology, University of Massachusetts Medical School, Worcester, MA, USA. [2]Z-Concepts LLC, East Haven, CT, USA. [3]Dept. of Radiology, University of Arizona, Tucson, AZ, USA [1*]Kesava.kalluri@umassmed.edu

3:30 - 3:45 pm	Paper #223 - 042	Use of Realistic Simulated Images and Task-based Image Quality Measures to Optimize Administered Activity in Pediatric Renal 99mTc-DMSA SPECT	Y. Li[1] , S. O'Reilly[2] , D. Plyku[1] , S.T. Treves[3] , Y. Du[1] , F. Fahey[3] , X. Cao[3] , A. . Jha[1] , W.E. Bolch[2] , G. Sgouros[1] , and E. C. Frey[1]	[1] Dept. of Radiology, Johns Hopkins University, Baltimore, MD [2] Dept. of Biomedical Engineering, University of Florida, Gainesville, FL [3] Boston Children's Hospital, Harvard University, Boston, MA
3:45 - 4:00 pm	Paper #224 – 033	MicroCT-Based Methods for Assessing Imaging Dose to Active Marrow and Bone Endosteum	Wesley Bolch[1,*], Deanna Pafundi[2], Michael Wayson[3], and Perry Johnson[4]	[1,*]J. Crayton Pruitt Family Department of Biomedical Engineering, University of Florida, Gainesville FL, USA. [2.]Department of Radiation Oncology, Mayo Clinic, Rochester MN, USA. [3.] Department of Medical Physics and Radiation Safety, Baylor Scott & White, Dallas TX, USA. [4.]Department of Radiation Oncology, University of Miami, Miami FL, USA

4:00 - 5:00 pm	***Coffee Break & Poster Session #23******

Listing of the poster presentations can be found on Page 9.

Tuesday Scientific Session #24: *Radiation Protection*

Session Chair: *Maria Zankl, Ph.D., Helmholtz Zentrum München, Germany*
Session Co-Chair: *Chan Hyeong Kim, Ph.D., Hanyang University, Seoul, South Korea*

Invited Talk

5:00 - 5:30 pm	***New mesh-type ICRP reference computational phantom***	***Chan Hyeong Kim, Ph.D.***	***Hanyang University, Seoul, South Korea***

5:30 - 5:45 pm	Paper #231 - 004	Development of 3D printed age-specific thyroid phantoms	T. Beaumont[1,*], P. Caldeira Ideias[2], D. Broggio[1], and D.Franck[1]	T. Beaumont[1,*], P. Caldeira Ideias[2], D. Broggio[1], and D.Franck[1]. [1,*]Institut de Radioprotection et de Sûreté Nucléaire (IRSN), PRP-HOM/SDI/LEDI, Fontenay-aux-Roses, France. [2.] Institut de Radioprotection et de Sûreté Nucléaire (IRSN), PRP-ENV/SESURE/LS3E, Le Vésinet, France *Corresponding author: tiffany.beaumont@irsn.fr
5:45 - 6:00 pm	Paper #232 - 046	Comparison of Two-Dosimeter Algorithms for the Effective Dose Evaluation with the Tetrahedral-Mesh-Based Computational Human Phantoms	Do Hyeon Yoo[1], Wook Geun Shin[1], and Chul Hee Min[1,*]	[1.]Department of Radiation Convergence Engineering and Research Institute of Health Science, Yonsei University, Wonju, Korea
5:45 - 6:00 pm	Paper #233 - 047	Preliminary Study on Evaluation of Extremity Dose by Using Mesh-type Hand Phantom	Han Sung Kim[1], Jae Seok Kim[1], Wi-Ho Ha[1,*], Young-Woo Jin[1]	[1,*.]National Radiation Emergency Medical Center, Korea Institute of Radiological and Medical Sciences (KIRAMS), Seoul, Korea
6:15 - 6:30 pm	Paper #234 -028	Towards Personalized MRI Safety Assessment via 3D Registration of Anatomical Human Models	Manuel Murbach 1,*, Alessandro Alaia1 , Bryn A. Lloyd[1], Esra Neufeld[1] , Wolfgang Kainz[2] , Fraser Robb , and Niels Kuster[1,4]	[1,*.]IT'IS Foundation, Zurich, Switzerland [2.] FDA, CDRH, Silver Spring, MD [3.] GE Healthcare, Aurora, OH [4.] ETH Zurich, Switzerland

5:30 - 6:30 pm	***Free Time***

Wednesday, August 30, 2017

7:30 - 8:30 am	***Breakfast***

Plenary Session 3

Session Chair: *Matthew Mille, Ph.D., NCI, USA*

8:30 - 9:15 am	***Organ dose for CT patients based on computational phantoms and application to epidemiological studies***	***Choonsik Lee, Ph.D.***	***NCI, NIH, USA***

Wednesday Scientific Session #31: *Application of computational human phantoms to epidemiological studies of radiation risk*

Session Chair: *Choonsik Lee, Ph.D., NCI, USA*
Session Co-Chair: *Matthew Mille, Ph.D., NCI, USA*

9:15 - 9:30 am	Paper #311 - 011	Computational Phantoms Applied To The Study Of Late Effects Following Radiotherapy	Matthew Mille[1], Gleb Kuzmin[1]1, Jae Won Jung[2], Choonik Lee[3], Mahesh Gopalakrishnan[4], John Kalapurakal4, and Choonsik Lee[1,*]	[1,*]Division of Cancer Epidemiology and Genetics, National Cancer Institute, National Institutes of Health, Rockville, MD. [2] Department of Physics, East Carolina University, Greenville, NC 3Department of Radiation Oncology, University of Michigan, Ann Arbor, MI. [4] Department of Radiation Oncology, Northwestern Memorial Hospital, Chicago, IL
9:30 - 9:45 am	Paper #314 - 025	Dosimetry Approaches for Radiographic and Fluoroscopic Exposures	David Borrego*[§], Cari Kitahara* , A. Iulian Apostoaei[†] , and Choonsik Lee*	*Division of Cancer Epidemiology and Genetics, National Cancer Institute, National Institutes of Health 9609 Medical Center Drive, Bethesda MD 20892-9778 [†]Oak Ridge Center for Risk Analysis, Inc., 102 Donner Drive, Oak Ridge, TN 37830
9:45 - 10:00 am	Paper #313 - 060	Experience and future application of computational human phantoms in dosimetry for post-Chernobyl epidemiological studies	Vladmir Drozdovitch1,*, Lienard Chang1, Konstantin Chizhov2, Victor Kryuchkov2, Choonsik Lee1	1 Division of Cancer Epidemiology and Genetics, National Cancer Institute, National Institutes of Health, Rockville, MD 2 Burnasyan Federal Medical Biophysical Center, Moscow, Russia
10:00 - 10:15 am	Paper # 315 - 035	Study of Mortality in Patients Who Underwent I-131 Treatment for Hyperthyroidism	Dunstana R. Melo[1,*], Stephanie Lamart[2] , Choonsik Lee[3] , André Bouville[4] , Steven L. Simon[3]	Melohill Technology LLC, Rockville, MD 20850, USA, [2] Laboratoire de RadioToxicologie, CEA/DSV/IRCM, France, [3]Division of Cancer Epidemiology and Genetics, National Cancer Institute, Rockville, MD 20850, USA, [4] National Cancer Institute, Rockville, MD 20850, USA (retired)
10:15 - 10:30 am	Paper #312 - 015	Reducing misclassification error in dose reconstruction for external photon exposure using body size-specific computational human phantoms	Sarah Kim, Lienard Chang, Elizabeth Mosher, and Choonsik Lee	Division of Cancer Epidemiology and Genetics, National Cancer Institute, National Institutes of Health, Rockville, MD

10:30 - 11:00 am	***Coffee Break***

Wednesday Scientific Session #32: *Dosimetry Applications II*

Session Chair: *Rui Qiu, Ph.D., Tsinghua University, Beijing, China*
Session Co-Chair: *Wesley Bolch, Ph.D., University of Florida, Gainesville, USA*

Invited Talk

11:00 - 11:30 am	***Providing organ doses to the nation's first comprehensive radiation epidemiological study of childhood cancer and medical imaging – applications of the UF/NCI hybrid computational phantom library.***	***Wesley Bolch, Ph.D.***	***University of Florida, Gainesville, USA***

11:30 - 11:45 am	Paper #321 - 037	Construction of a computational model of pregnant patients with twins for radiation dosimetry	Tianwu Xie[1] , Paolo Zanotti Fregonara[2,3] and Habib Zaidi[1,4]*	[1] Department of Medical Imaging and Information Sciences, Geneva University Hospital, CH-1211 Geneva 4, Switzerland [2] Department of Nuclear Medicine, University Hospital of Bordeaux, Bordeaux, France [3] Houston Methodist Research Institute, Houston, TX, USA [4] Department of Nuclear Medicine and Molecular Imaging, University Medical Center Groningen, Groningen, Netherlands
11:45 am - 12:00 pm	Paper #322 - 022	Voxelized Nuclear Medicine Internal Dose Estimation Based on SPECT/CT Imaging	Ruiyao Ma[1,2], Rui Qiu[1,2], Li Ren[1,2], Chunyan Li[3] ,Zhen Wu[3] and Junli Li[1,2*]	[1]Department of Engineering Physics, Tsinghua University, Beijing, China [2]Key Laboratory of Particle & Radiation Imaging, Tsinghua University, Ministry of Education, Beijing, China [3]Joint Institute of Tsinghua University and Nuctech Company Limited, Beijing, China
12:00 - 12:15 pm	Paper #323 - 056	Accurate Assessment of Patients' Skin Dose Before Radiotherapy Using Tetrahedral-Mesh-based Computational Human Phantom	Bo Wee Cheon[1], Do Hyeon Yoo[1], Hyun Joon Choi[1], Jung In Kim[2] and Chul Hee Min[1,*]	[1,*] Department of Radiation Convergence Engineering, Yonsei University, Republic of Korea [2] Department of Radiation Oncology, Seoul National University Hospital, Republic of Korea
12:15 - 12:30 pm	Paper #324 - 051	Validation of a hepatic arterial tree and infusion model for use in treatment planning	Nathan Crookston1,*, Eric Frey2	1,*.Department of Electrical and Computer engineering, Johns Hopkins University, Baltimore, MD 2.Department of Medical Imaging Physics, Johns Hopkins University, Baltimore, MD

12:30 - 2:00 pm	***Lunch***

Wednesday Scientific Session #33: *Phantom Development III*

Session Chair: *Yeon Soo Yeom, Ph.D., Hanyang University, Seoul, South Korea*
Session Co-Chair: *Tomoaki Nagaoka, Ph.D., NIICT, Tokyo, Japan*

Invited Talk

2:00 - 2:30 pm	***Applications of A Volume Morphing Technique for Anatomical Human Models***	***Tomoaki Nagaoka, Ph.D.***	***NIICT, Tokyo, Japan***

2:30 - 2:45 pm	Paper #331 - 054	Calibrating Surface-Based Human Phantoms with High-Fidelity Voxel Phantoms: A Case Study with VHP-Female and Austin Woman Models	Jackson W. Massey1,*, Alexander Prokop2, and Ali E. Yılmaz3	1 Electrical and Computer Engineering, The University of Texas at Austin, Austin, USA, jackson.massey@utexas.edu 2 CST AG, Darmstadt, Germany, alexander.prokop@cst.com 3 Electrical and Computer Engineering, The University of Texas at Austin, Austin, USA, ayilmaz@mail.utexas.edu
2:45 - 3:00 pm	Paper #332 - 021	Insights Gained From Electrophysiologically	Antonino M. Cassarà[1,*], Esra	[1,*] IT'IS Foundation for Research on Information Technologies in Society, Zurich, Switzerland. [2] Swiss Federal Institute of

		Functionalized Anatomical Models: Exposure Safety and Targeted Therapeutic Stimulation	Neufeld[1], Hazael Montanaro[1,2], Wolfgang Kainz[3], and Niels Kuster[1,2]	Technology (ETHZ), Zurich, Switzerland. [3.]Center for Devices and Radiological Health, Food and Drug Administration (FDA), Silver Spring, USA
3:00 - 3:15 pm	Paper #333 - 048	One Phantom, Three Codes: The Use of a Polygon Mesh Phantom in MCNP6, FLUKA, and Geant4	Chelsea D'Angelo*§, Andrew Davis* , Paul Wilson* , and Chan Hyeong Kim† , Min Cheol Han†	*University of Wisconsin-Madison, Dept. of Nuclear Engineering and Engineering Physics, CNERG Madison, WI †Hanyang University, Dept. of Nuclear Engineering, HUREL Seoul, Korea
3:15 - 3:30 pm	Paper #334 - 008	Reducing the memory requirements of high resolution voxel phantoms by means of a binary tree data structure	Andreu Badal and Aldo Badano	Division of Imaging, Diagnostics, and Software Reliability, OSEL, CDRH, U.S. Food and Drug Administration Silver Spring, Maryland, United States

3:30 - 4:00 pm	***Closing Ceremony***

*List of Poster Presentations

Poster Session #23

(4:00 – 5:00 pm, Tuesday, August 29, 2007)

Session Chair: *Okkyun Lee, Ph.D., Johns Hopkins University*
Session Co-Chair: *Abhinav Jha, Ph.d. Johns Hopkins University*

Computational Human Phantom

Paper #2301P - 013	Development of a Mesh Male Adult Phantom with blood and lymph vessels - application in Lymphoscintigraphy	P. H. A. Andrade1,*, J. W. Vieira2, M. O. M. Cabral1, and F. R. A. Lima3	1,*. Department of Nuclear Energy, UFPE Recife, Brazil, 2. Department of Environment, Health and Safety, IFPE Recife, Brazil, 3. Northeast Regional Nuclear Science Center, CNEN Recife, Brazil.
Paper #2302P - 020	Establishment of Chinese Adult Female Phantoms with Detailed Breast Structure and Different Breast Sizes	Ankang Hu[1,2,3], Rui Qiu[1,2,3,*], Li Ren[1,2,3], Wenjing Wang[1,2,3], Zhen Wu[1,4], Chunyan Li[1,4], Junli Li[1,2,3]	[1]Department of Engineering Physics, Tsinghua University, Beijing, China [2]Key Laboratory of Particle & Radiation Imaging, Tsinghua University, Ministry of Education, Beijing, China, [3]Joint Institute of Tsinghua University and Nuctech Company Limited, Beijing, China
Paper #2303P - 023	Development of Mesh-type Chinese Pediatric Reference Phantoms Series	Ruiyao Ma[1,2], Rui Qiu[1,2], Mingliang Dai[1,2], Li Ren[1,2] , Zhen Wu[3] ,Chunyan Li[3] and Junli Li[1,2*]	[1]Department of Engineering Physics, Tsinghua University, Beijing, China [2]Key Laboratory of Particle & Radiation Imaging, Tsinghua University, Ministry of Education, Beijing, China [3]Joint Institute of Tsinghua University and Nuctech Company Limited, Beijing, China
Paper #2304P - 039	Development of a library of adult anthropomorphic phantoms through more realistic scaling of organ masses	Azadeh Akhavanallaf[1] , Tianwu Xie[1] , Habib Zaidi[1,2,3,4†]	[1]Division of Nuclear Medicine and Molecular Imaging, Geneva University Hospital, CH-1211 Geneva 4, Switzerland. [2]Geneva Neuroscience Center, Geneva University, CH-1205 Geneva, Switzerland. [3]Department of Nuclear Medicine and Molecular Imaging, University of Groningen, 9700 RB Groningen, Netherlands [4]Department of Nuclear Medicine, University of Southern Denmark, 500 Odense, Denmark
Paper #2305P - 040	Improvement of in-vivo counting through acquisition of 3D images with the Kinect sensor	Pasquale Alessandro Lombardo[1,2]*, Filip Vanhavere[3] , Anne-Laure Lebacq[4] , and Ria Bogaerts[2]	[1,]* Research in Dosimetric Applications. SCK•CEN, Boeretang 200, Mol 2400, Belgium [2.] Laboratory of Experimental Radiotherapy, Katholieke Universiteit Leuven, Herestraat 49, 3000 Leuven, Belgium [3.]Radiation Protection, Dosimetry and Calibration. SCK•CEN, Boeretang 200, Mol 2400, Belgium, [4.]

			Dosimetric and Calibration Services. SCK•CEN, Boeretang 200, Mol 2400, Belgium
Paper #2306P - 059	Equipotential lines as organ contour description	Janine Becker[1,*] and Mattia Fedrigo[2]	[1,*]Institute of Radiation Protection, Helmholtz Zentrum München, Neuherberg, Germany [2]mattia.fedrigo@web.de
Paper #2307P - 044	A Novel Robotic Motion Phantom For Ground Truth Motion in Medical Imaging	Clifford Lindsay[1],* Aditya Bhat[2], Michael A. King[1], and Michael A. Gennert[2]	[1]Dept of Radiology, University of Massachusetts Medical School, Worcester, US [2]Robotics Engineering Program, Worcester Polytechnic Institute (WPI), Worcester, US

Biomedical Imaging

Paper #2308P – 005	A Phantom Study for the Evaluation of the Iterative Deconvolution Algorithm for Image Enhancement in Clinical CT	N.V. Slavine [1)] , J. Guild [2)] , R.W. McColl [2)] , J.A. Anderson [2)] , O.K. Oz [3)] , R.E. Lenkinski [1)]	Translational Research [1)] , Clinical Medical Physics [2)] and Nuclear Medicine [3)] , Department of Radiology, UT Southwestern Medical Center, 5323 Harry Hines Boulevard, Dallas, Texas, 75390-9061, USA
Paper #2309P – 006	Planar Phantom for Modelling the Passage of Radioactive Bolus through the Right Heart	Dacian V. Bonta[1,2*], John N. Aarsvold[1,2]	[1,*]Nuclear Medicine Service, Veterans Affairs Medical Center Atlanta, [2]Department of Radiology and Imaging Sciences, Emory University, Atlanta GA
Paper #2310P – 055	Application of computational breast phantoms to evaluate reconstruction methods for fluorescence molecular tomography	Yansong Zhu, Abhinav K. Jhay,x and Arman Rahmimy	Department of Electrical and Computer Engineering, Johns Hopkins University, Baltimore, USA. yDepartment of Radiology, Johns Hopkins University, Baltimore, USA
Paper #2311P – 002	Microwave Detection of an Osteophyte in a Knee	Todd R. McCollough[1,*] and Wenyi Shao[1]	[1]Celadon Research Division, Ellumen Inc., Arlington, VA, USA
Paper #2312P - 061	A GPU-Accelerated Virtual Clinical Trial Pipeline for Digital Breast Tomosynthesis	Bruno Barufaldi [1*], Predrag R. Bakic[1], David Higginbotham[1], David D. Pokrajac[2], and Andrew D.A Maidment[1]	[1]Department of Radiology, University of Pennsylvania, Philadelphia, US [2]Computer and Information Sciences Department, Delaware State University, Dover, Delaware

Radiation Dosimetry

Paper #2313P – 029	RADAR Reference Anthropomorphic Phantoms for Internal and External Dosimetry	Michael G. Stabin	Department of Radiology and Radiological Sciences, Vanderbilt University, 1161 21st Avenue South, Nashville, TN 37232-2675
Paper #2314P - 045	PIMAL: A GUI-Driven Software Package To Conduct Radiation Dose Estimation Using Realistic Postures"	Shaheen Dewji[1,*], Eli Sanchez[1] , K. Lisa Reed[2] , Kathryn Bales[3] , Mullin Green[3] , Mauritius Hiller[1] , Tanya Oxenberg[4]	[1,*].Center for Radiation Protection Knowledge, Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN, USA. [2] Nuclear and Radiological Engineering Program, Georgia Institute of Technology, Atlanta, GA, USA. [3] Department of Nuclear Engineering, University of Tennessee – Knoxville, Knoxville, TN, USA. [4] United States Nuclear Regulatory Commission, Rockville, MD, USA