

# EPSM-ABEC 2009

ENGINEERING AND PHYSICAL SCIENCES IN MEDICINE & THE AUSTRALIAN BIOMEDICAL ENGINEERING COLLEGE CONFERENCE

current as at 27 October 2009

## Program

### Sunday, 8 November 2009

1600	Registration—Hotel Realm
0830–1730	ACPSEM council meeting and training sessions
1730–1900	WELCOME RECEPTION—National Portrait Gallery

### Monday, 9 November 2009

**Day 1—Theme(s) of the day: Emergency and disaster medicine, Technology in the operating room, Radiotherapy, Nuclear medicine**

0730	Registration opens	
0900–1030	<b>Session 1—Opening plenary session</b> Session coordinator: Michael Flood, Conference Convenor	
0900	Welcome and official opening <b>David Tiller</b> AO FRACP, Sydney Medical School, University of Sydney	
0930	<i>Back to the future in health care technology</i> <b>James Keller</b> , ECRI Institute, USA	
1015	Housekeeping messages	
1030–1100	MORNING TEA and trade display	
1100–1230	<b>Session 2—Plenary sessions</b>	
	<b>2A: Nuclear medicine and radiotherapy</b> Chair: Thomas Kron Room:	<b>2B: Health care technologies of the future</b> Chair: Martin Van Lith Room:
1100	<i>Back to the future in nuclear medicine</i> <b>Dale Bailey</b> , Royal North Shore Hospital and University of Sydney	<i>Health Care Technology 2020—Health technology for dummies: a guide to managing the future</i> <b>Gerry FitzGerald</b> , Queensland University of Technology
1145	<i>Respiratory motion management in radiotherapy: past, present and future</i> <b>Sastry Vedam</b> , University of Texas, USA Sponsored to attend by Varian Medical Systems Australasia Pty Ltd	<i>Health technology—the future</i> <b>Marc Lakos</b> , 1st Health Support Battalion

1230–1330	LUNCH and trade display			
1230–1330	<i>Crisis in health care financing in North America: a medical physicist's perspective</i> — <b>Ervin Podgorsak</b> , McGill University			
1230–1330	Radiation Oncology Specialty Meeting			
1330–1500	<b>Session 3—Breakout sessions</b>			
	<b>3A: Radiotherapy</b> Chair: Peter Greer Room:	<b>3B: Nuclear medicine and medical imaging</b> Chair: Dale Bailey Room:	<b>3C: Sensors and signal processing</b> Chair: Paul Junor Room:	<b>3D: Emergency and disaster medicine</b> Chair: Bruce Morrison Room:
1330	<i>Consideration of temporary intra-fraction prostate movement during external beam radiotherapy</i> <b>Tomas Kron</b> , Peter MacCallum Cancer Centre	<i>Photogrammetric tooth surface mapping—a new approach</i> <b>Malcolm Grenness</b> , University of Tasmania	<i>Modelling of the interaction between intra and extra ocular pressure using electrical circuit elements</i> <b>S Mojtaba Golzan</b> , Macquarie University	<i>Development of emergency and disaster management education and research programs and health management programs</i> <b>Gerry FitzGerald</b> , Queensland University of Technology
1350	<i>In-vivo rectal wall dosimetry for radiotherapy</i> <b>Natalka Suchowerska</b> , Royal Prince Alfred Hospital	<i>Modification of a PET respiratory gating system for amplitude gating</i> <b>Robert Barnett</b> , Westmead Hospital	<i>Central nervous system microstimulation—development of the auditory brainstem implant</i> <b>Stefan Mauger</b> , La Trobe University	<i>First responders and battlefield medicine</i> <b>Marc Lakos</b> , 1st Health Support Battalion
1410	<i>A silicon strip detector dose magnifying glass for IMRT dosimetry</i> <b>Jeannie Wong</b> , University of Wollongong	<i>A theoretical comparison between a hybrid emission imager and a collimated anger camera</i> <b>Jeremy Brown</b> , Monash University	<i>Continuously variable realistic lung gas exchange simulation</i> <b>Rebecca Bailey</b> , La Trobe University and Alfred Hospital	<i>Australian Defence Force deployable health care</i> <b>Tracey Smart</b> , RAAF
1430	<i>BrainLab ExacTrac patient alignment data review</i> <b>Kathleen Roxby</b> , William Buckland Radiotherapy Centre	<i>Development of a software program to assess levels of geometric distortion in MR images for deep brain stimulation procedures</i> <b>Thomas Greig</b> , Sir Charles Gairdner Hospital	<i>Low-cost electronic health diagnostic equipment for the developing world</i> <b>Jono Nevile</b> , La Trobe University	<i>The needs of a mobile first responder—an ambulance perspective</i> <b>Howard Wren</b> , ACT Ambulance Service
1450	Further questions and discussion	Further questions and discussion	Further questions and discussion	Further questions and discussion
1500–1530	AFTERNOON TEA and trade display			

1530–1700		Session 4—Breakout sessions			
		4A: IMRT dosimetry workshop Chair: Brendan Hill Room:	4B: Monte Carlo Chair: Zdenka Kuncic Room:	4C: Technology in the operating room Chair: Phil Thorburn Room:	4D: Biomedical engineering Chair: Ian Brown Room:
1530	<i>Film dosimetry</i> <b>Martin Butson</b> , Illawarra Cancer Care Centre	<i>Monte Carlo model of an X-ray beam for breast radiotherapy dose calculations</i> <b>Robin Hill</b> , Royal Prince Alfred Hospital	<i>Medical equipment in operating theatres</i> <b>Mike He</b> , The Canberra Hospital	<i>Device requirements of intermittent photic stimulation for photosensitive epileptic patients</i> <b>Christopher Glanville</b> , La Trobe University	
1550	<i>Electronic portal imaging devices as dosimeters for IMRT</i> <b>Peter Greer</b> , Calvary Mater Newcastle Hospital	<i>Monte Carlo dosimetry for stereotactic radiosurgery</i> <b>Tanya Kairn</b> , Queensland University of Technology			
1610	<i>Dosimeters in IMRT review</i> <b>Brendan Hill</b> , Premion, <b>Philip Vial</b> , Liverpool and Macarthur Cancer Therapy Centres	<i>Monte Carlo modelling and experimental characterisation of the MOSkin radiation dosimeter at clinical kilo voltage energies</i> <b>Cheryl Lian</b> , Centre for Medical Radiation Physics	<i>Using heart rate variability to monitor fentanyl-induced changes in ANS preceding respiratory depression</i> <b>Anne-Louise Smith</b> , Flinders University	<i>Flow metabolism coupling as an indicator of depth of anaesthesia</i> <b>Thushara Perera</b> , La Trobe University and Royal Children's Hospital	
1630	Panel	<i>Development of a Monte Carlo model for CVD diamond detectors in radiotherapy</i> <b>Florentina Baluti</b> , Christchurch Hospital	<i>Anaesthesia and consciousness depth monitoring correlates and design</i> <b>David Burton</b> , Compumedics Limited	<i>Intellectual property management as a part of technology management for medical device technologies</i> <b>Maryam Khajeh</b> , Davies Collison Cave	
1650	Further questions and discussion	Further questions and discussion	Further questions and discussion	Further questions and discussion	
1700	Close of Day 1				
1700–1800	Radiology Specialty Meeting				

## Tuesday, 10 November 2009

### Day 2—Theme(s) of the day: Quality and safety, Neonatal and paediatric medicine, Hospital in the home, Imaging

0800	Registration opens			
0800–0900	Nuclear Medicine Speciality Meeting			
0900–1030	<b>Session 5—Breakout sessions</b>			
	<b>5A: Imaging in radiotherapy</b> Chair: Sastry Vedam Room:	<b>5B: Medical imaging</b> Chair: Anthony Wallace Room:	<b>5C: Asset planning and management</b> Chair: Peter Taunton Room:	<b>5D: Neonatal and paediatric medicine</b> Chair: Clifford Stephenson Room:
0900	<i>Three-dimensional analysis with daily stereoscopic X-ray imaging of intrafraction patient motion in head and neck treatments using five points fixation masks</i>  <b>N Senthilkumar</b> , Father Muller Medical College, India	DRL survey	<i>Asset Management Program 2009—asset management risk assessment matrix</i>  <b>Adrian Scott, Melanie Brown</b> , ACT Health	Workshop <i>Current and future technology needs in neonatology</i>  <b>Zsuzsoka Kecskes</b> , The Canberra Hospital
0920	<i>Simple and efficient pre-treatment IMRT verification using EPIDs</i>  <b>Philip Vial</b> , Liverpool and Macarthur Cancer Therapy Centres	DRL survey	<i>Asset management workshop</i>  <b>TBC</b> , DHS Victoria  <b>Robert Thompson</b> , NSW Department of Commerce	
0940	<i>Amorphous silicon EPID application for routine quality control and IMRT verification</i>  <b>Tania Groudeva</b> , Palmerston North Hospital, New Zealand	Topic group: radiology special interest discussion	<b>Phil Thorburn</b> , Royal Adelaide Hospital  <b>Ken Wilson</b> , BEHTS	<i>Innovations to a unique, free-field, sound effects audiometer</i>  <b>Thushara Perera</b> , La Trobe University and Royal Children's Hospital
1000	<i>Cone beam CT as a tool to verify the internal target volume for lung cancer radiotherapy</i>  <b>Tomas Kron</b> , Peter MacCallum Cancer Centre	Topic group: radiology special interest discussion		<i>Pulse oximeter sensor accuracy and patient safety</i>  <b>Geoff Mathews</b> , Endovations/TEC
1020	Further questions and discussion	Further questions and discussion	Further questions and discussion	Further questions and discussion
1030–1100	MORNING TEA and trade displays			

1100–1230				
Session 6—Breakout sessions				
6A: Management of technology in radiotherapy Chair: May Whittaker Room:		6B: Treatment planning Chair: Robin Hill Room:	6C: Biomedical technologies Chair: Richard Dove Room:	6D: Neonatal and paediatric medicine Chair: James McCauley Room:
1100	<i>Paperless medical physics QA in radiation therapy</i> <b>Jianjie Luo</b> , Sydney West Area Health Service	<i>Composite dose distribution verification support for accuracy of dynamical Arc-IMRT treatment delivery</i> <b>Yang Wang</b> , Radiation Oncology Associates	<i>High-level time synchronisation in epoch-based, long-term wireless on-body sensor networks</i> <b>Joshua Khoo</b> , Monash University	<i>Neonatal and paediatric emergency transport systems</i> <b>James McCauley</b> , Westmead Children's Hospital
1120	<i>Voluntary feedback guided breath hold for hypo-fractionated stereotactic body radiotherapy: the MD Anderson experience</i> <b>Sastry Vedam</b> , University of Texas, USA	<i>Concept for adaptive therapy replanning</i> <b>Michael Jameson</b> , Liverpool and Macarthur Cancer Therapy Centres	<i>Wireless orthopaedic pin for bone healing and growth: antenna development</i> <b>Parisa Zakavi</b> , Monash University	
1140	<i>Physics and the paperless radiotherapy department</i> <b>Rebecca Murry</b> , Radiation Oncology	<i>Clinical significance of source size overestimation caused by the detector volume effect in a radiotherapy treatment planning system in 3DCRT and IMRT plans</i> <b>Johnson Yuen</b> , St George Hospital	<i>Wireless passive radio frequency based monitoring system for sleep apnoea patient (especially paediatric patients)</i> <b>Nemai Karmakar</b> , Department of Electrical and Computer System Engineering, Monash University	<i>Paediatric versus adult technology—a BME perspective</i> <b>Adrian Richards</b> , Women and Children's Hospital
1200	<i>Pre- and post-treatment MLC error analysis based on MLC and dynamic log files</i> <b>Jacek Chojnowski</b> , Westmead Cancer Care Centre	<i>An empirically motivated radiotherapy margin recipe</i> <b>Alan Herschtal</b> , Peter MacCallum Cancer Centre	<i>Innovate or invalidate? A review of patent filing trends in medical engineering</i> <b>Alyssa Grabb</b> , Phillips Ormonde Fitzpatrick Patent and Trade Mark Attorneys	
1220	Further questions and discussion	Further questions and discussion	Further questions and discussion	Further questions and discussion
1230–1330	LUNCH and trade displays			
1230–1330	<i>Optimisation of workflow/process via asset and patient tracking</i> — <b>David Venning</b> , GE Healthcare			
1230–1330	Radiation Protection Specialty Meeting			

1330–1500	<b>Session 7—Plenary session</b> Session coordinator: Sastry Vedam
1330	<i>Evolving trends in academic and clinical education of medical physicists</i> <b>Ervin Podgorsak</b> , McGill University
1410	<i>Quality and safety in health care</i> <b>Chris Baggoley</b> , The Australian Commission on Safety and Quality in Healthcare
1500–1530	AFTERNOON TEA and trade displays
1530–1700	<b>Session 8—Poster session</b>
1700	Close of Day 2
1730	EA CBME Meeting
1730	ACPSEM AGM
1930	Joint Councils Executive Meeting

## Wednesday, 11 November 2009

### Day 3—Theme(s) of the day: Back to the future, Health technology assessment, Technology management, Professional development

0800	Registration opens
0800–0900	Biomed Engineering Speciality Meeting
0900–1030	<b>Session 9—Plenary session</b> Session coordinator: Michael Flood
0900	<i>ECRI's assessments of health care technology</i> <b>James Keller</b> , ECRI Institute, USA
0940	<i>Health technology assessment and horizon scanning</i> <b>Brian Richards</b> , Australian Government Department of Health and Ageing
1030–1100	MORNING TEA and trade display

1100–1230				
Session 10—Breakout sessions				
	10A: Regional medical physics Chair: Surinder Koul Room:	10B: Medical physics Chair: Sean Geoghegan Room:	10C: Device performance on the market Chair: Jim Keller Room:	10D: Maintenance engineering Chair: Rob Wilkins Room:
1100	<i>Medical physicists and cancer control program in India</i> <b>Surinder K Koul</b> , Sher-I-Kashmir Institute of Medical Sciences, India Sponsored to attend by Elekta Pty Ltd	<i>Study of peripheral dose in paediatric head and neck patients using a low cost, easily modifiable phantom, the 'jelly-baby'</i> <b>Paul White</b> , Prince of Wales Hospital	<i>Quality and safety—hazards and recalls</i> <b>James Keller</b> , ECRI Institute, USA	<i>Reliability centred maintenance: a maintenance strategy for biomedical engineering</i> <b>Phillip Thorburn</b> , Royal Adelaide Hospital
1120	<i>Appropriate technology for developing countries</i> <b>Barry Allen</b> , University of New South Wales	<i>Cross-sectional human tissue equivalent phantoms</i> <b>Tony De Souza-Daw</b> , La Trobe University	<i>Usability and ergonomics—why and how we use them in the investigation of medical device adverse event reports</i> <b>Ying Huang</b> , Therapeutic Good Administration	
1140	Asia–Pacific special interest group discussion <b>May Whitaker</b> , SSWAHS	<i>Near-catheter dosimetry of a HDR brachytherapy source using Gafchromic® film</i> <b>David Odgers</b> , Royal Prince Alfred Hospital	<i>Post market medical devices regulation—case studies on post market medical devices incident investigation and monitoring process</i> <b>Senthilvel Natarajan</b> , Therapeutic Goods Administration	<i>AS 3551 Testing of mains cables—effect of cable length on results</i> <b>Patrick O'Meley</b> , SSWAHS
1200		<i>Three-dimensional dosimetry imaging technique of I-125 plaque for eye cancer treatment</i> <b>Dean Cutajar</b> , University of Wollongong	<i>Sustainable improvements in incident management—it can be done</i> <b>Liza Dale</b> , ACT Health	<i>Adjusting planned inspection intervals using risk management principles</i> <b>Ken Wilson</b> , Queensland Health
1220	Further questions and discussion	Further questions and discussion	Further questions and discussion	Further questions and discussion
1230–1330	LUNCH and trade display Posters			
1230–1330	University Specialty Group Meeting			
1230–1330	<i>Does DICOM compliance guarantee interoperability?</i> — <b>Andrew Barnhill</b> , GE Healthcare			

1330–1500				
Session 11—Breakout sessions				
	11A: TEAP workshop Chair: Steve Howlett Room:	11B: Medical physics Chair: Rhonda Brown Room:	11C: Biomedical engineering education and partnerships Chair: Karen Reynolds Room:	11D: AS 3551 Workshop Chair: Rob Wilkins Room:
1330	<i>Medical physics teaching, accreditation and certification in North America</i> Ervin Podgorsak <i>TEAP radiation oncology</i>	<i>O KiloVolate: where art thou? The dosimetric investigation of LMA electron cones for the treatment of superficial cancers</i> <b>Richard Short</b> , Radiation Oncology Associates	<i>The Melbourne School of Engineering and the Department of Clinical Engineering teaching partnership</i> <b>Emmanuel Koumoundouros</b> , University of Melbourne	<i>Mains power cable maintenance strategies</i> <b>Graham Elsegood</b> , Royal Adelaide Hospital
1350	Steve Howlett <i>TEAP nuclear medicine</i> Stefan Eberl <i>TEAP radiology</i>	<i>Radiation mis-information and informed consent of participants in human research</i> <b>Martin Caon</b> , Flinders University	<i>The Medical Device Partnering Program</i> <b>Karen Reynolds</b> , Flinders Medical Devices and Services	<i>Risk management of medical equipment using AS 4360</i> <b>Patrick O'Meley</b> , SSWAHS
1410	John Cormack <i>Canada and Australia—mutual recognition?</i> Lisa Duggan	<i>Fifteen years since the development of the Australian gamma surgical probe for applications in lymphoscintigraphy and lymphobiopsy</i> <b>Carl Muñoz-Ferrada</b> , Gammasonics Institute for Medical Research	<i>Biomedical training survey: who wants what?</i> <b>Karen Reynolds</b> , Flinders University	<i>Risk management of medical equipment using AS 4360—an empirical approach</i> <b>Patrick O'Meley</b> , SSWAHS
1430		<i>Dosimetric evaluation of CBCT images for adaptive IMRT/IGRT treatment planning</i> <b>Chuan-Dong Wen</b> , Royal Hobart Hospital	<i>Student competency guide for biomedical engineers (clinical engineering stream)</i> <b>Steven Somerwil</b> , Mercy Health	<i>Performance and safety inspections</i> <b>Clifford Stephenson</b> , Northern Sydney Central Coast Health
1450	Further questions and discussion	Further questions and discussion	Further questions and discussion	Further questions and discussion
1500–1530	AFTERNOON TEA and trade display			

1530–1700		Session 12—Breakout sessions		
	<b>12A: Training and education TEAP workshop</b> <b>Chair:</b> Steve Howlett <b>Room:</b>	<b>12B: Radiotherapy dosimetry</b> <b>Chair:</b> Martin Butson <b>Room:</b>	<b>12C: Workforce planning</b> <b>Chair:</b> Jennie Baker <b>Room:</b>	<b>12D: AS 3551 Workshop</b> <b>Chair:</b> Stuart Clifton <b>Room:</b>
1530	PANEL Ervin Podgorsak Steve Howlett	<i>Gafchromic EBT2 film—the new generation film for radiotherapy dosimetry</i> <b>Martin Jonathan Butson</b> , Illawarra Cancer Care Centre	<i>The future of health care—a more integrated workforce?</i> <b>Liza Dale</b> , ACT Health	PANEL: Rob Wilkins Mike Flood
1550	Stefan Eberl Ray Budd John Turner Lisa Duggan Anne Perkins	<i>Matching varian beams on an Elekta accelerator for primary standard dosimetry; comparing modelled spectra and measured PDDs</i> <b>Jessica Lye</b> , Australian Radiation Protection and Nuclear Safety Agency	<i>Area biomedical staffing model—update</i> <b>Patrick O’Meley</b> , SSWAHS	Tony Blackler Adrian Richards Peter Taunton
1610	Brian Thomas Mark West	<i>Results of the 2009 Dosimetry Survey of Australian Radiotherapy Centres</i> <b>Duncan Butler</b> , Australian Radiation Protection and Nuclear Safety Agency	<i>Integrated business continuity management in health care</i> <b>Christine Miller</b> , ACT Health	
1630		<i>The feasibility of an air core scintillation dosimeter array: experiment and simulation</i> <b>Natalka Suchowerska</b> , Royal Prince Alfred Hospital	<i>Generic biomedical department organisational structure</i> <b>Patrick O’Meley</b> , SSWAHS	
1650		Further questions and discussion	Further questions and discussion	Further questions and discussion
1700	Close of Day 3			
1830–2330	CONFERENCE DINNER at Old Parliament House			

## Thursday, 12 November 2009

### Day 4—Theme(s) of the Day: The e-health environment, Working in remote areas or overseas

0800	Registration opens			
0900–1030	<b>Session 13—Plenary session</b>			
	<b>13A: Radiotherapy 2</b> Chair: Paul White Room:	<b>13B: Telemedicine</b> Chair: Patrick O'Meley Room:		
0900	<i>Medical physics in India and role of the Association of Medical Physicists of India</i> <b>Surinder K Koul</b> , Sher-I-Kashmir Institute of Medical Sciences, India Sponsored to attend by Elekta Pty Ltd	<i>Ten years of telepaediatrics—lessons learnt in Queensland</i> <b>Anthony Smith</b> , University of Queensland		
0940	<i>Advances in targeted alpha therapy for metastatic melanoma</i> <b>Barry J Allen</b> , St George Hospital Cancer Care Centre	<i>Telemedicine developments from CSIRO</i> <b>Chris Gunn</b> , ICT Laboratory CSIRO		
1020	Further questions and discussion		Further questions and discussion	
1030–1100	MORNING TEA and trade display			
1100–1230	<b>Session 14—Breakout sessions</b>			
	<b>14A: Advanced treatment technologies</b> Chair: Phil Vial Room:	<b>14B: Research and developments in medical physics</b> Chair Rick Franich Room:	<b>14C: Biomedical engineering</b> Chair: Ken Wilson Room:	<b>14D: Working in remote areas</b> Chair: Jennifer Brett Room:
1100	<i>Volumetric modulated arc radiotherapy with smartArc: comparison of smartArc and conventional IMRT for prostate radiotherapy</i> <b>Peter Metcalfe</b> , Centre for Medical Radiation Physics, University of Wollongong	<i>Is targeted anti-vascular alpha therapy efficacious and safe?</i> <b>Chen-Yu Huang</b> , University of New South Wales	<i>Technology embedment structure in medical setup of Pakistan</i> <b>Maria Hafeez</b> , Ministry of Science and Technology	<i>Working remotely in developing countries—keeping in touch and working effectively</i> <b>Bruce Morrison</b> , Haniham Pty Limited
1120	<i>Implementation of two-step intensity modulated arc therapy</i> <b>Jidi Sun</b> , University of Canterbury	<i>Dose measurement and enhancement of radiotherapeutic type proton beams</i> <b>Pradip Deb</b> , RMIT University	<i>Remote vital signs monitoring for the Cooeenet@qld Project</i> <b>Phil Cole</b> , Queensland Health	<i>MAMCI Project—medical aid mission for communities in need</i> <b>Jason Almeida</b> , Queensland University of Technology

1140	<i>The commissioning and implementation of VMAT at NCCI</i> <b>Brett Waller</b> , North Coast Cancer Institute	<i>Amelioration of light scattering artefacts in optical CT for polymer gel dosimetry</i> <b>Stephen Bosi</b> , Prince of Wales Hospital	<i>Development of an ambulatory multi-parameter physiological monitoring system</i> <b>Ke Ma, Joshua Khoo, Ian Brown</b> , Monash University	<i>Health of biomedical staff and nosocomial infections from medical devices</i> <b>Anne-Louise Smith</b> , Flinders University
1200	<i>Investigation of bulk electron density planning and automatic bone segmentation on T2* MR images for MR-based prostate radiotherapy planning</i> <b>Jonathan Lambert</b> , University of Newcastle	<i>The radiobiology of intra-fractional repair: theoretical and experimental evidence for temporal dose pattern effects</i> <b>Natalka Suchowerska</b> , Royal Prince Alfred Hospital	<i>A 2009 survey of the Australasian clinical medical physics workforce</i> <b>Howell Round</b> , University of Waikato	<i>Engineers Without Borders</i> <b>Huy Nyugen, Simon Osenieks</b> , Engineers Without Borders Australia
1220	Further questions and discussion	Further questions and discussion	Further questions and discussion	Further questions and discussion
1230	Presentation of prizes			
1245	Recap and invitation to attend EPSM-ABEC 2010 Melbourne			
1230	LUNCH			
1230–1330	Specialty Chairs Meeting			
1330	End of conference			