Journal of Physics: Conference Series

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Conference Programme

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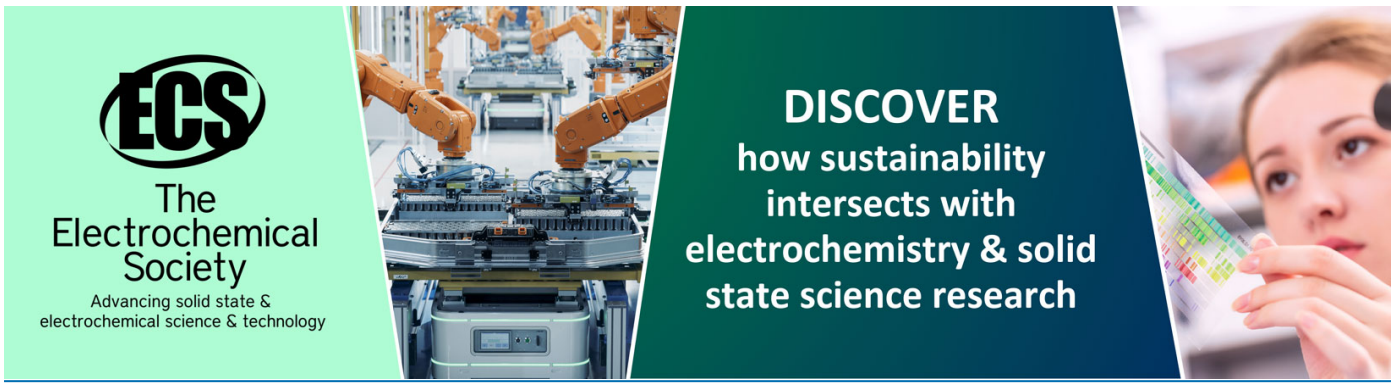
- Micro-Mini & Nano-Dosimetry & Innovative Technologies in Radiation Therapy (MMND&ITRO2016)



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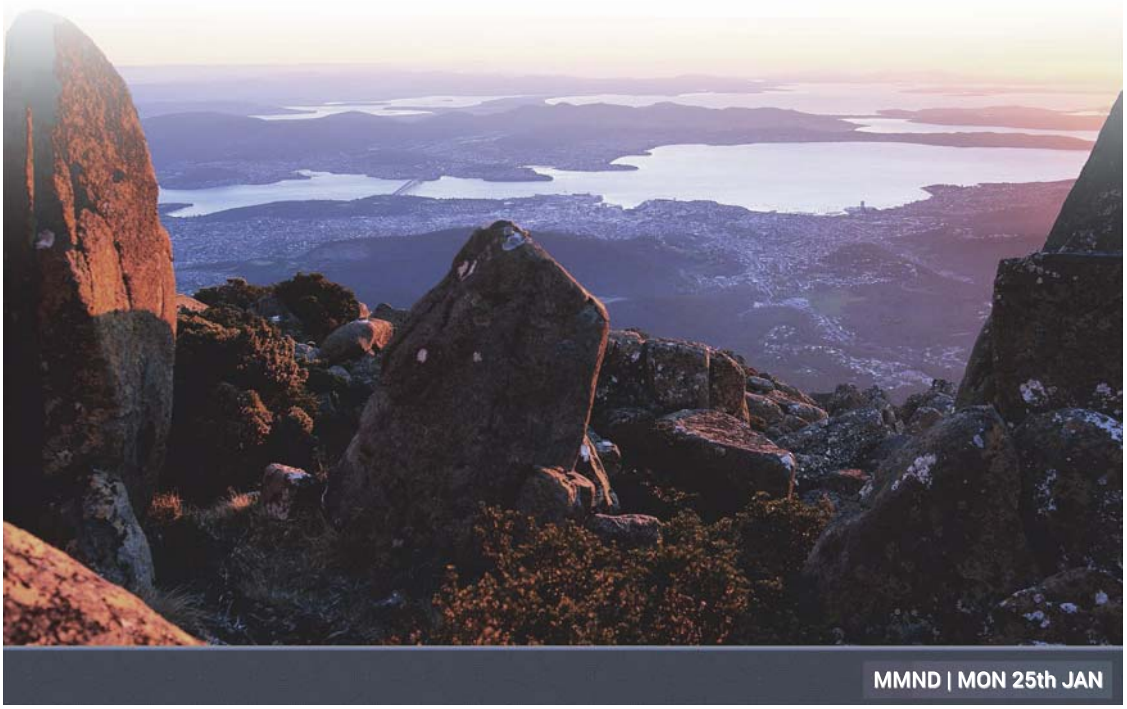
MONDAY | 25th January

Pre-Conference Registration
18:00 - 19:00



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DAY 1 | Tue 26th January

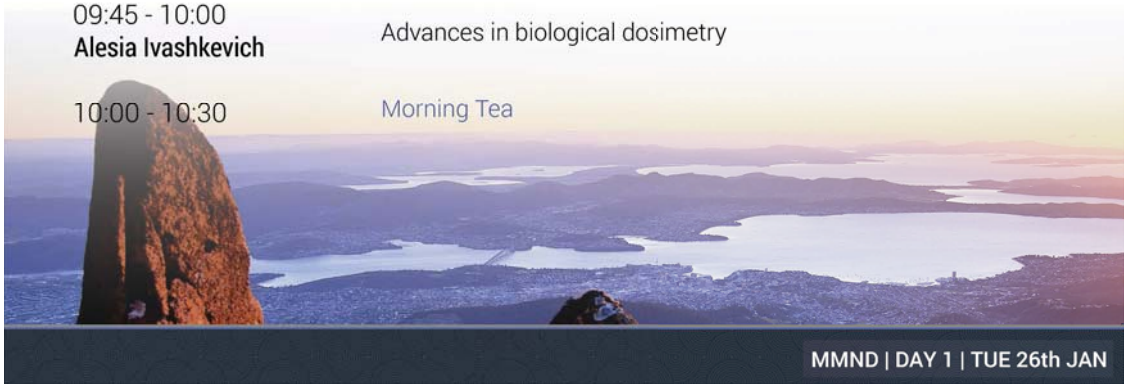
Opening: Micro, Mini and Nanodosimetry Conference 2016

08:00 - 08:20	Coffee and Registration
08:20 - 08:30 **Anatoly Rozenfeld**	Welcome Address
08:30 - 08:55 **Anatoly Rozenfeld**	From MMND IPCT to MMND ITRO : History and overview of CMRP research program

Session 1: Physics of radiation damage and protection in biological tissue

Chairs: Susanna Guatelli | Sandrine Lacombe

08:55 - 09:25 **Roger Martin** Invited Speaker	New DNA-binding ligands that act as topical radioprotectors, mimic endogenous rapid chemical repair
09:25 - 09:45 **Olga Martin** Invited Speaker	Monitoring dna damage response to predict radiotherapy-related normal tissue toxicity
09:45 - 10:00 **Alesia Ivashkevich**	Advances in biological dosimetry
10:00 - 10:30	Morning Tea



MMND & ITRO 2016

Session 2: Nanoparticles and nanodosimetry in radiation therapies

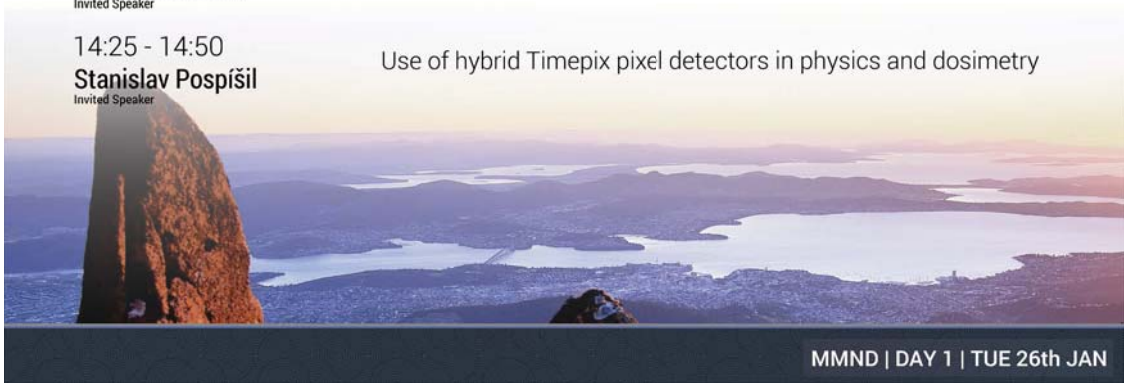
Chairs: Moeava Tehei | Olga Martin

10:30 - 10:55 **Stephen McMahon** Invited Speaker	Gold nanoparticles: Macro- and micro-dosimetric considerations and implications for radiosensitisation
10:55 - 11:20 **Sandrine Lacombe** Invited Speaker	Nanoparticles: Exquisite tools to improve radiation therapy
11:20 - 11:45 **Shivaji Pawar** Invited Speaker	Nanotechnology in Medicine-Physicist Perspective
11:45 - 12:00 **Seung Hoon Yoo** Invited Speaker	Simulation study of dose enhancement in a cell due to nearby carbon and oxygen in particle radiotherapy
12:00 - 12:15 **Moeava Tehei**	Multimodal therapy and multidisciplinary approach: The key for better treatments
12:15 - 12:30 **Bo Li**	Nanodosimetric ionisation cluster size distrubution in view of Heisenberg's Uncertainty Principle
12:30 - 13:30	*Lunch*
13:30 - 13:45 **Susanna Guatelli**	Geant4-DNA: A Monte Carlo package to characterise the effect of high-Z nanoparticles in radiotherapy
13:45 - 14:00 **Yizheng Chen**	DNA damage induced by low-energy photons simulated with nanodosimetry Monte Carlo code - NASIC

Session 3: Dosimetry and microdosimetry in space

Chairs: Anatoly Rozenfeld | Naruhiro Matsufuji

14:00 - 14:25 **Lawrence Pinsky** Invited Speaker	Medipix in space: Past results and future plans
14:25 - 14:50 **Stanislav Pospíšil** Invited Speaker	Use of hybrid Timepix pixel detectors in physics and dosimetry



MMND | DAY 1 | TUE 26th JAN

MMND & ITRO 2016

14:50 - 15:05 **Peter Beck** Invited Speaker	A tissue equivalent proportional counter for the assessment of the radiation quality at the International Space Station
15:05 - 15:30	Afternoon Tea

Session 4: Dosimeters in Radiation Therapy

Chairs: Marco Petasecca | Stanislav Pospíšil

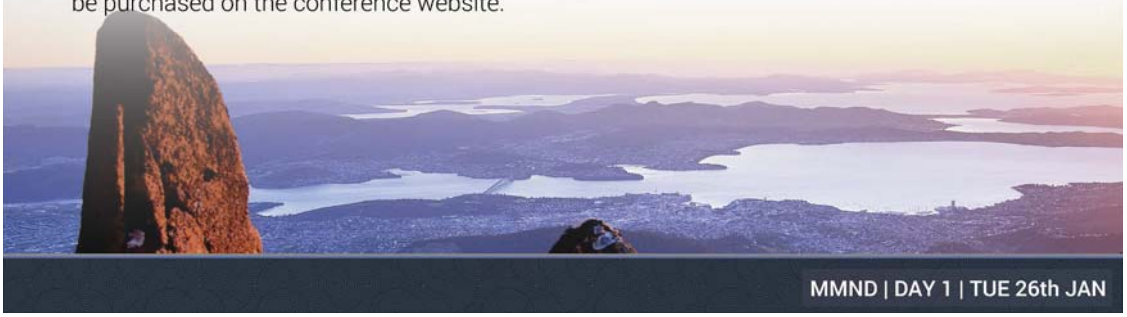
15:30 - 15:45 **Filip Vanhavere** Invited Speaker	Feasibility of microdosimetry for carbon beams using mini tissue-equivalent proportional counters
15:45 - 16:00 **Clive Baldock** Invited Speaker	Advancements in gel dosimetry
16:00 - 16:15 **Ikuo Kanno**	Two-dimensional "transXend" detector for energy-resolved computed tomography
16:15 - 16:30 **Francesca Bisello**	Clinical characterization of a monolithic silicon technology for dosimetry in external beam radiotherapy and proton therapy
16:30 - 16:45 **Marco Petasecca**	Development of a silicon diode for skin dosimetry
16:45 - 17:00 **Fumihiko Nishkido**	X-Ray transparent detector for IVR dosimeter using organic photodiodes combined to plastic scintillators

Australia Day: BBQ Dinner

Starts at 18:30

Australia Day is the official National Day of Australia. Celebrated annually on 26 January, it marks the anniversary of the 1788 arrival of the First Fleet of British Ships at Port Jackson, New South Wales, and the raising of the Flag of Great Britain at that site by Governor Arthur Phillip. In present-day Australia, celebrations reflect the diverse society and landscape of the nation, and are marked by community and family events, reflections on Australian history, official community awards, and citizenship ceremonies welcoming new immigrants into the Australian community.

Come together at 6:30pm and celebrate with a BBQ Dinner. Tickets are $95 (+ GST) each and can be purchased on the conference website.



MMND | DAY 1 | TUE 26th JAN

DAY 2 | Wed 27th January

Session 1: RBE based treatment planning and QA in Particle Therapy

Chairs: Linh Tran | Peter Beck

08:00 - 08:30	Coffee and Registration
08:30 - 08:55 **Naruhiro Matsufuji** Invited Speaker	Microdosimetric approach to RBE modeling and its implementation in treatment planning and ridge filters design
08:55 - 09:20 **Michael Krämer** Invited Speaker	More Ions for Radiotherapy: About Treatment Planning and Track Simulations
09:20 - 09:45 **Reinhard Schulte** Invited Speaker	Advances in nandosimetric treatment planning for particle beam radiation therapy
09:45 - 10:00 **Malte Ellerbrock** Invited Speaker	Dosimetric quality assurance for scanned ion-beam therapy at HIT
10:00 - 10:30	Morning Tea

MMND & ITRO 2016

Session 2: Ion physics and detectors

Chairs: Igor Bray | Koji Noda

10:30 - 10:45 **Alisher Kadyrov** Invited Speaker	Ab initio energy-loss calculations for micro- and nanoscale radiation damage simulations
10:45 - 11:00 **David Hinde** Invited Speaker	Applications of a superconducting solenoidal separator in the experimental investigation of nuclear reactions
11:00 - 11:15 **Mahananda Dasgupta** Invited Speaker	Challenges in describing nuclear reaction outcomes at near-barrier energies
11:15 - 11:30 **Benedikt Bergmann**	Measurement of ionizing energy depositions after fast neutron impact in silicon
11:30 - 11:45 **Linh Tran**	3D silicon microdosimetry and RBE study using ^{12}C ions of different energies

Session 3: Microbeam Radiation Therapy

Chairs: Michael Lerch | Anna Vignati

11:45 - 12:00 **Daniel Häusermann** Invited Speaker	The Australian Synchrotron Imaging and Medical Beamline: New Facilities for in-vivo imaging and radiotherapy
12:00 - 12:15 **Jayde Livingstone**	Dosimetry for spatially fractionated radiotherapy at the Australian synchrotron
12:15 - 12:30 **Michael Lerch**	Innovative semiconductor dosimetry in microbeam radiation therapy
12:30 - 13:30	Lunch

Session 4: Quality Assurance in Hadron Therapy

Chairs: Malte Ellerbrock | Alisher Kadyrov

13:30 - 14:00 **Francesco Romano** Invited Speaker	Status of ELIMED the medical and multidisciplinary beamlines at ELI-beamline
14:00 - 14:15 **Matthias Würl**	Experimental studies with two novel silicon detectors for the development of time-of-flight spectrometry of laser-accelerated proton beams

MMND | DAY 2 | WED 27th JAN

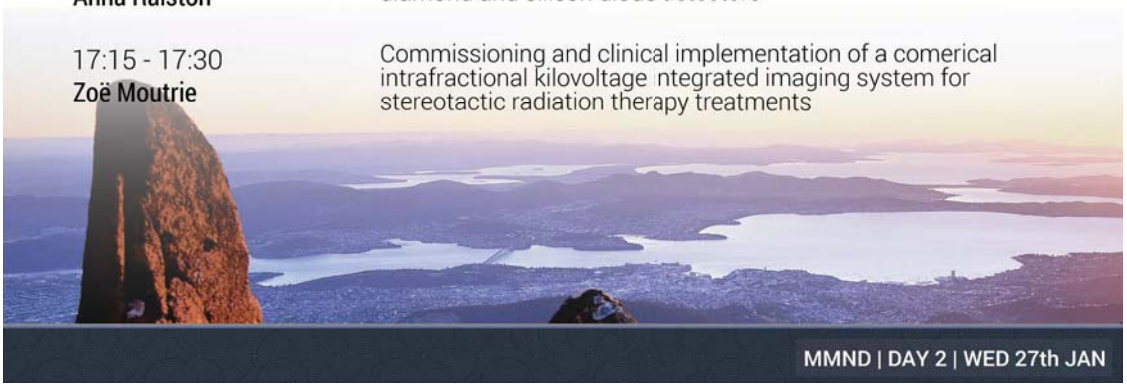
MMND & ITRO 2016

14:15 - 14:30 **Anna Vignati** Invited Speaker	Fast dose analysis of movement effects during treatments with scanned proton and carbon-ion beams
14:30 - 14:45 **Wenjing Chen**	Treatment verification with off-line PET imaging in particle therapy and its clinical use at HIT
14:45 - 15:00 **Michele Togno**	Characterization of novel solutions for daily QA and patient plan verification in pencil beam proton beams
15:00 - 15:30	Afternoon Tea (with poster session)

Session 5: Advancing X-ray radiotherapy

Chairs: Anna Ralston | Tomas Kron

15:30 - 15:45 **Mauro Carrara** Invited Speaker	Breathing induced prostate motion: Development of a patient's specific model based on Calypso transponders analysis
15:45 - 16:00 **Peter Metcalfe** Invited Speaker	Introducing Dynamic Dosimaging: Potential applications to MRI-linac
16:00 - 16:15 **Jarrad Begg**	The Australian MRI-Linac Program: Measuring profiles and PDD in a horizontal beam
16:15 - 16:30 **Justin Turpin**	The Elkta MRI-Linac
16:30 - 16:45 **Michael Jameson**	Investigating the relationship between treated gross tumour volume (GTV) and metabolic tumour volume (MTV) for non-small cell lung cancer patients
16:45 - 17:00 **Meng Cai**	Linearization of film dosimetry system and reference dosimetry for SBRT quality assurance
17:00 - 17:15 **Anna Ralston**	The current status of small field output measurements using diamond and silicon diode detectors
17:15 - 17:30 **Zoë Moutrie**	Commissioning and clinical implementation of a comerical intrafractional kilovoltage integrated imaging system for stereotactic radiation therapy treatments



MMND | DAY 2 | WED 27th JAN

DAY 3 | Thur 28th January

Session 1: Proton and HIT Therapy 1

Chairs: Anatoly Rozenfeld | Carl Rossi

08:00 - 08:30	Coffee and Registration
08:30 - 09:05 **Masumi Umezawa** Invited Speaker	Advanced technology based on scanning irradiation for particle therapy system
09:05 - 09:25 **Koji Noda** Invited Speaker	Development of heavy-ion radiotherapy facility in Japan
09:25 - 09:45 **Taiga Yamaya** Invited Speaker	OPENPET: A novel open-type PET system for 3D dose verification in particle therapy
09:45 - 10:00 **Malte Ellerbrock** Invited Speaker	Clinical operation of the Heidelberg Ion-Beam Therapy Center
10:00 - 10:30	Morning Tea

MMND & ITRO 2016

Session 2: Proton and HIT Therapy 2

Chairs: Michael Jackson | Hirohiko Tsuji

10:30 - 10:55 **Jay Flanz** Invited Speaker	Current and future technical challenges in particle therapy
10:55 - 11:15 **Damien Bertrand** Invited Speaker	Protect, enhance and save more lives with proton therapy
11:15 - 11:35 **Carl Rossi** Invited Speaker	The Scripps Proton Therapy Facility
11:35 - 11:50 **Morten Høyer** Invited Speaker	Establishment of the Danish Center For Particle Therapy
11:50 - 12:05 **Reinhard Schulte** Invited Speaker	Advances in proton imaging for treatment planning, verification, and adaptation in particle beam radiation therapy
12:05 - 12:30 **Chandan Guha** Invited Speaker	Radioprotectors in Radiation Therapy
12:30 - 13:30	Lunch

Session 3: Clinical/SBRT 1

Chairs: Peter Metcalfe | Wolfgang Tome

13:30 - 13:55 **Vladimir Feygelman** Invited Speaker	Measurement and calculation of 4D dose
13:55 - 14:20 **Wolfgang Tomé** Invited Speaker	An overview of current and future methods of image guided SBRT
14:20 - 14:45 **Paul Keall** Invited Speaker	Innovative technologies in radiation oncology: One city building two new cancer radiotherapy systems
14:45 - 15:10 **Tomas Kron** Invited Speaker	Patient specific quality control for SABR: One phantom does not fit all
15:10 - 15:30	Afternoon Tea

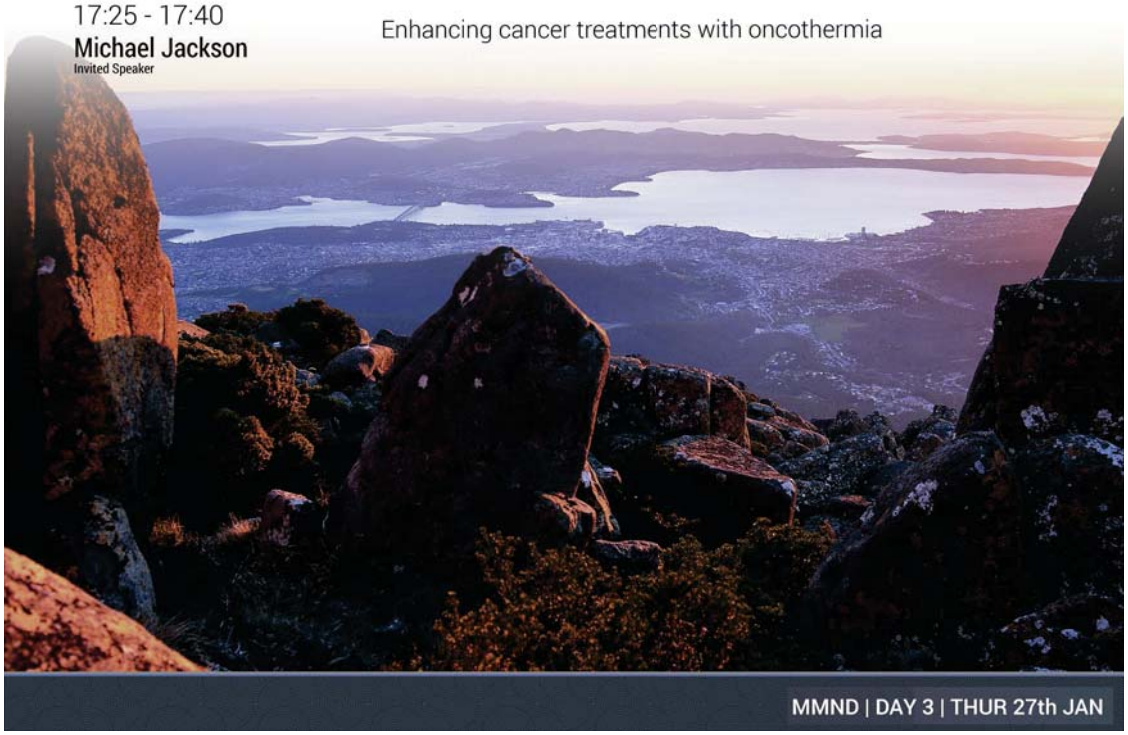
MMND | DAY 3 | THUR 27th JAN

MMND & ITRO 2016

Session 4: Clinical/SBRT 2

Chairs: Paul Keall | Vladimir Feygelman

15:30 - 15:55 **Chris Beltran** Invited Speaker	Clinical implementation of a proton therapy dose verification system based on GPU accelerated Monte Carlo calculations
15:55 - 16:10 **Nicholas Hardcastle**	The LIGHT SABR Clinical Trial: Tumour tracking radiotherapy for superior lung cancer outcomes
16:10 - 16:25 **Johannes Thoelking**	Patient-specific dose verification for 6MV flattening filter free (FFF) beams based on transmission measurements
16:25 - 16:40 **Vaughan Moutrie**	Out of field dose during Gamma Knife treatment: A paediatric case study
16:40 - 16:55 **Sankar Arumugam**	Clinical implementation of SeedTracker for prostate SBRT: Experience and gains so far
16:55 - 17:10 **Shankar Siva**	Effect of stereotactic ablation on normal kidney function – Radiobiological modelling of a dose / response relationship
17:10 - 17:25 **Kathryn Clarke**	Is it necessary to consider optic nerve movement when treating the optic nerve with stereotactic radiosurgery?
17:25 - 17:40 **Michael Jackson** Invited Speaker	Enhancing cancer treatments with oncothermia



MMND & ITRO 2016

DAY 4 | Fri 29th January

Social Day: MONA Muesum

The Museum of Old and New Art (MONA) is an art museum located within the Moorilla winery on the Berriedale peninsula in Hobart, Tasmania, Australia. It is the largest privately funded museum in Australia, known for its playful and through-provoking exhibitions.

As this is not an organised event, you can make your way to the museum on a ferry from the Mona Ferry Terminal, just 3km away from the Wrest Point. Pricing for the ferry ride and museum admission can be found on the museum website. Don't forget to get back to the Wrest Point by 5:30pm for communication with industry, followed by evening drinks and a gala dinner.

Gala Dinner: Wrest Point

Pre-dinner drinks from 18:15

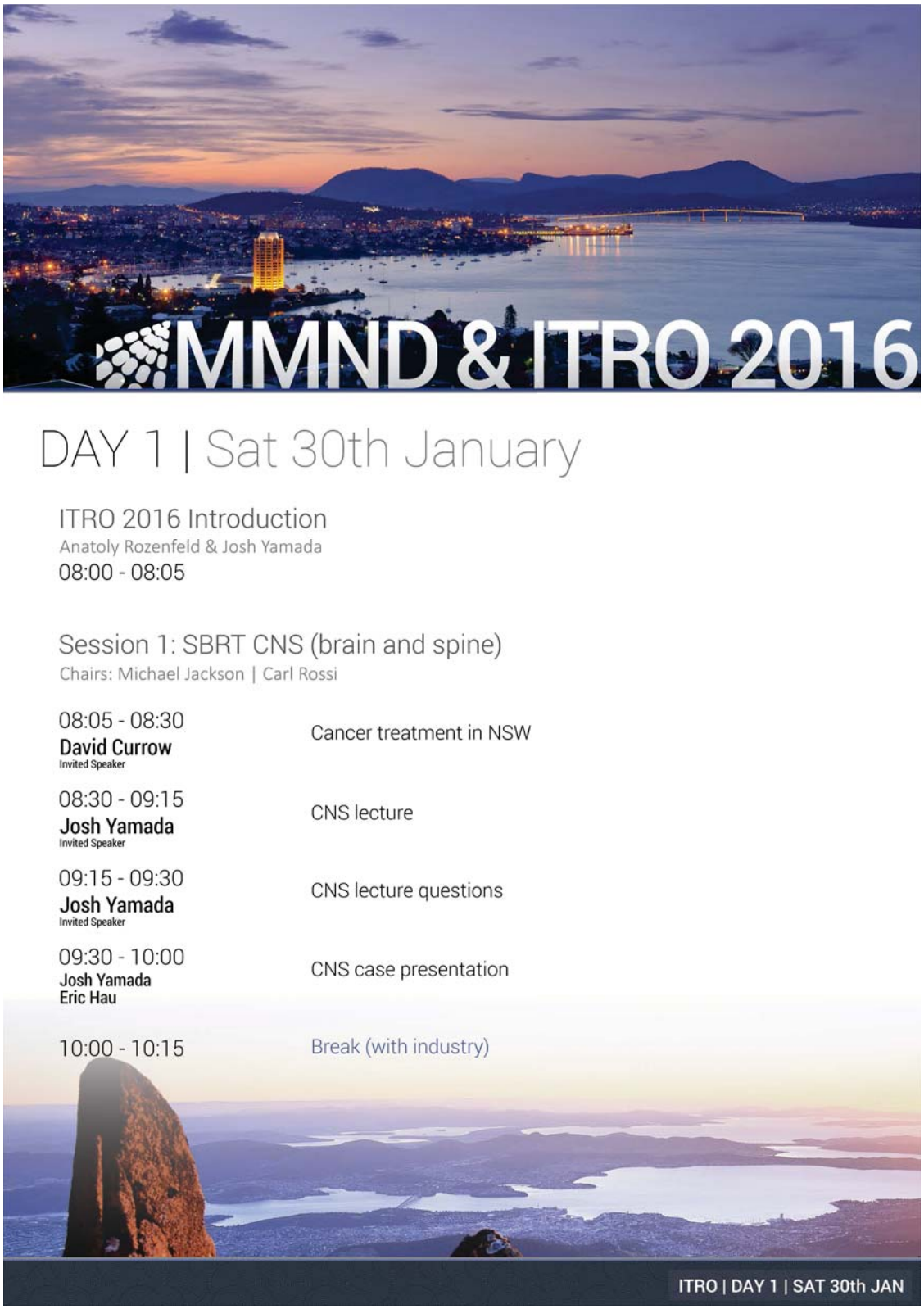
Enjoy pre-dinner drinks with industry from 18:15 - 18:55 in the foyer, sponsored by Hitachi. Then come together at 19:00 in the Wrest Point Derwent Room for a gala dinner. Cost is included in the conference registration (MMND, ITRO or combined). Additional tickets for guests can be purchased from the conference website.

Transportation

A taxi is $10.00-15.00 AUD from Wrest Point to the Salamanca, where both the MONA Ferry Terminal and the Drunken Admiral Restaurant are located. This is generally the easiest option as the Wrest Point has a taxi rank outside the front doors, and cheapest if split with multiple people.

Alternatively, a standard bus fare is $3.10. Timetables are available at the Wrest Point Guest Services desk, who can also assist in giving directions to the bus stop.

Finally, if you enjoy a walk along the waterfront through Battery Point from Wrest Point to Salamanca, this takes approximately 30-40 minutes.


MMND & ITRO 2016
DAY 1 | Sat 30th January
ITRO 2016 Introduction
Anatoly Rozenfeld & Josh Yamada
08:00 - 08:05
Session 1: SBRT CNS (brain and spine)
Chairs: Michael Jackson | Carl Rossi
08:05 - 08:30
David Currow
Invited Speaker
Cancer treatment in NSW
08:30 - 09:15
Josh Yamada
Invited Speaker
CNS lecture
09:15 - 09:30
Josh Yamada
Invited Speaker
CNS lecture questions
09:30 - 10:00
Josh Yamada
Eric Hau
CNS case presentation
10:00 - 10:15
Break (with industry)
ITRO | DAY 1 | SAT 30th JAN

MMND & ITRO 2016

Session 2: SBRT GI (liver and pancreas)

Chairs: Marketa Skala | Patrick Kupelian

10:15 - 11:00 **Albert Koong** Invited Speaker	GI lecture
11:00 - 11:15 **Albert Koong** Invited Speaker	GI lecture questions
11:15 - 11:45 **Albert Koong** **Andrew Kneebone**	GI case presentation
11:45 - 12:00	Break (with industry)

Session 3: SBRT thoracic (lung)

Chairs: Verity Ahen | Madhur Garg

12:00 - 12:45 **Tom Dilling** Invited Speaker	Lung lecture
12:45 - 13:00 **Tom Dilling** Invited Speaker	Lung lecture questions
13:00 - 13:30 **Tom Dilling** **Marketa Skala**	Lung case presentation
13:30 - 14:30	Lunch

Session 4: SBRT head and neck

Chairs: Shankar Siva | Albert Koong

14:30 - 15:15 **Madhur Garg** Invited Speaker	Head and neck lecture
15:15 - 15:30 **Madhur Garg** Invited Speaker	Head and neck lecture questions
15:30 - 16:00 **Madhur Garg** **Andrew Miller**	Head and neck case presentation

ITRO | DAY 1 | SAT 30th JAN

MMND & ITRO 2016

Session 5 Immunotherapy

Chairs: Morten Høyer | Joseph Bucci

16:00 - 16:20 **Chandan Guha** Invited Speaker	Immunotherapy lecture
16:20 - 16:30 **Chandan Guha** Invited Speaker	Immunotherapy lecture questions
16:30 - 19:00	Free time

Social Dinner: The Drunken Admiral

Starts at 19:00

The Drunken Admiral has been operating as a family run restaurant since 1979. The diner provides a truly unique experience, offering the very freshest Tasmanian seafood and meals set amongst a vibrant maritime atmosphere. Being one of Hobarts most iconic restaurants, it's popular with both locals and tourists alike.

Get together with the MMND ITRO Faculty at the Drunken Admiral at 7pm. Tickets can be purchased for $85, which includes a set menu + drinks. There are limited tickets available due to the size of the restaurant - first in, best dressed! See conference website for details.

Transportation

A taxi is $10.00-15.00 AUD from Wrest Point to the Salamanca, where both the MONA Ferry Terminal and the Drunken Admiral Restaurant are located. This is generally the easiest option as the Wrest Point has a taxi rank outside the front doors, and cheapest if split with multiple people.

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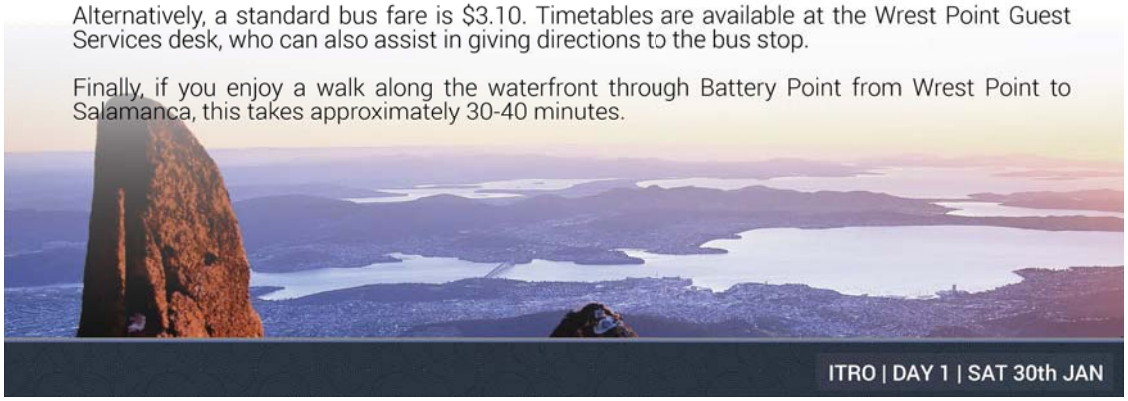
Finally, if you enjoy a walk along the waterfront through Battery Point from Wrest Point to Salamanca, this takes approximately 30-40 minutes.



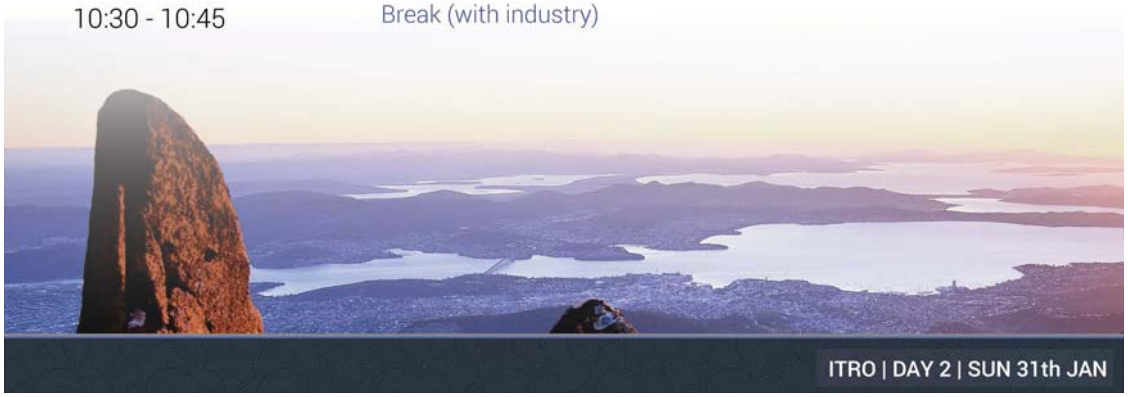
ITRO | DAY 1 | SAT 30th JAN

DAY 2 | Sun 31th January

Session 1: SBRT GU (prostate)

Chairs: Andrew Kneebone | Tom Dilling

08:00 - 08:45 **Patrick Kupelian** Invited Speaker	GU lecture 1
08:45 - 09:00 **Patrick Kupelian** Invited Speaker	GU lecture 1 questions
09:00 - 09:45 **Morten Høyer** Invited Speaker	GU lecture 2
09:45 - 10:00 **Morten Høyer** Invited Speaker	GU lecture 2 questions
10:00 - 10:30 **Morten Høyer** **Patrick Kupelian** **Joseph Bucci**	GU case presentation
10:30 - 10:45	Break (with industry)



MMND & ITRO 2016

Session 2: Particles (protons and carbon)

Chairs: Michael Jackson | Chandan Guha

10:45 - 11:15 **Carl Rossi** Invited Speaker	Advancements in proton therapy
11:15 - 11:45 **Hirohiko Tsujii** Invited Speaker	Carbon ions
11:45 - 12:00 **Carl Rossi** **Hirohiko Tsujii**	Particle therapy questions
12:00 - 12:30	Lunch (with industry)

Session 3: Special topics

Chairs: Tomas Kron | Mauro Carrara

12:30 - 12:40 **Anatoly Rozenfeld**	Innovative quality assurance for SBRT
12:40 - 13:00 **Paul Keall** Invited Speaker	Bench-to-bedside implementation of real-time image guidance and adaptation in prostate and lung SBRT
13:00 - 13:20 **Vladimir Feygelman** Invited Speaker	Effect of respirtory motion on target dose
13:20 - 13:40 **Wolfgang Tomé** Invited Speaker	Spine SBRT using VMAT
13:40 - 14:00 **Anatoly Rosenfeld** **Paul Keall** **Vladimir Feygelman** **Wolfgang Tomé**	Questions

Closing and future meetings

Anatoly Rozenfeld & Josh Yamada

14:00 - 14:10