

## NPL PPRIG Proton Therapy Physics Workshop 2016

### DAY 1: 1<sup>st</sup> December 2016

9:00 am	Arrival, Registration & Coffee	
9:20 am	Welcome & Setting the Scene	Ranald Mackay
9:30 am	<b>Plenary Proton Therapy Overview</b>	Gillies McKenna
-----Session 1: Dosimetry-----		
10:00 am	<b>Invited: Graphite Calorimeter/Collaboration with Clatterbridge</b>	Russell Thomas
10:20 am	<b>Update: Development of the UK IPEM code of practice for proton beam therapy</b>	Stuart Green
10:40 am	Mailed dosimetry auditing in Proton Therapy – Eurados intercomparison of passive dosimeter response in proton spot scanning beam	M. De Saint-Hubert
10:55 am	Comparing proton energy depositions simulated using TOPAS-nBio to experimental measurements implemented using fluorescent nuclear track detectors	Tracy Underwood
11:10 am	Experimental evaluation of the water-equivalence of novel plastic materials in clinical proton beams	Ana Lourenço
11:25 am	Coffee	
-----Session 2: Imaging-----		
11:55 am	<b>Invited: Energy Boost for Imaging</b>	Hywel Owen
12:15 pm	Tumor edge identification through multiple Bragg peak detection in carbon therapy	Marta F. Dias
12:30 pm	CMOS Active Pixel Sensors for imaging in proton radiotherapy	M. Esposito
12:45 pm	An optimization method for pre-treatment patient-specific stopping-power by combining proton radiography and X-ray CT	Charles-Antoine Collins-Fekete
1:00 pm	Lunch & poster session	
2:05 pm	<b>Invited: Clinical imaging challenges for proton therapy</b>	Marcel Van Herk
2:35 pm	<b>Update: Pravda project imaging update</b>	Nigel Allinson
2:55 pm	Characterization and Dosimetric Evaluation of a Prototype Proton CT Scanner	Valentina Giacometti
3:10 pm	The Impact of Using Dual-Energy CT for Determining Proton Stopping Powers of Real Tissues	Esther Bär
3.25 pm	Accurate Monte Carlo inputs for dose calculation using multi-energy CT	Arthur Lalonde
3:40 pm	Coffee	
-----Session 3: Proton treatment-----		
4:10 pm	<b>Invited: Patient Selection</b>	Thomas Mee
4:40 pm	Adaptive Proton Therapy Dose Calculations on Cone-Beam Computed Tomography Imaging	Brian Winey
4:55 pm	Testing the effect of breathing variability on proton therapy plans and motion mitigation techniques	Ho Lok Man
5:10 pm	<b>Group Discussion</b>	

**DAY 2: 2<sup>nd</sup> December 2016**

## -----Session 4: RBE-----

9:00 am	<b>Invited: Clinical considerations of RBE in proton therapy</b>	Harald Paganetti
9:30 am	Clinical evidence that end-of-range proton RBE exceeds 1.1: lung density changes following chest RT	Tracy Underwood
9:45 am	Improved understanding of radiotoxicity in charged particle therapy using Geant4 simulations	Roger Barlow
10:00 am	<b>Invited: Mapping RBE effects at the cellular level: relevance for fractionated proton radiotherapy</b>	Kevin Prise
10:30 am	Predicting proton induced DNA damage through nanodosimetric simulations and the relevance of chromatin structure	Nicholas T. Henthorn
10:40 am	Proton Induced Complex DNA Damage: In Silico Modelling of Repair Using Geant4-DNA	John W. Warmenhoven

10:50 am Coffee

## -----Session 5: Facility-----

11:20 am	<b>Invited: Some challenges for a physicist to overcome when starting up a new proton facility</b>	Hakan Nystrom
11:50 am	The Christie Proton Therapy Research Facility	M. J. Merchant
12:05 pm	HEATHER - Helium ion Accelerator for radioTHERapy	Jorden Taylor

12:20 pm Lunch & poster session

## -----Session 6: Range verification-----

1:20 pm	<b>Invited: Myths and realities of range uncertainty in proton therapy</b>	Tony Lomax
1:50 pm	The lateral edge of proton beams: Clinical relevance and current developments	Adam Aitkenhead
2:05 pm	A pilot study on the possibility of RadICAL in in-vivo range verification in proton therapy	Savanna Chung
2:20 pm	Proton Calorimetry for Range Quality Assurance	Simon Jolly

2:35 pm Coffee

3:05 pm	Estimation of range uncertainties in proton therapy associated with sub-CT resolution heterogeneity	Sumaria Nazir
3:20 pm	Imaging of prompt gamma emissions during proton cancer therapy for geometric and dosimetric verification: Optimisation of Compton Camera system	Benjamin Le Crom
3:35 pm	<b>Invited: Network and collaboration</b>	Karen Kirkby
3:55 pm	<b>Discussion and closing remarks</b>	