

Hands-on 3D/2D Linac Beam Scanning Workshop

MTMI

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February 17-19, 2012
held at
Oregon Health Sciences University
Portland, OR

Hands-on 3D/2D Linac Beam Scanning Workshop

MTMI

Medical Technology
Management Institute

Making Technology Work for You!

February 17-19, 2012
held at
Oregon Health and Science University
Portland, OR

Program includes:

- data collection with 5 different scanning systems
- data conversion to 5 different planning systems

About the Workshop

Defining the 2 and 3 dimensional attenuation profiles of radiation beams from a medical linear accelerator (Linac) is extremely important to the accurate delivery of radiation dose distributions for the treatment of cancer. These data are usually collected upon commissioning of a Linac and after replacement of certain major parts. Data must be collected for all beam energies and beam types for which the machine will be used including multiple photon and electron energies, multi-leaf collimators, small fields and any beam shaping accessories that may be used. Proper procedures for collecting these data have been defined in task group report 106 from the American Association of Physicists in Medicine. This workshop will provide a training opportunity for medical physicists following recommendations of the TG106 report. Beam scanning systems from multiple vendors will be used in the training. Hands-on demonstrations of 3D and 2D beam data collection will be done on linacs from several different vendors. Analysis and preparation of beam data for transfer to 5 different treatment planning systems will be demonstrated in a laboratory format.

Who Should Attend

This hands-on workshop is for medical physicists interested in training on the collection of linac beam data following TG106 recommended procedures and preparation of beam data for treatment planning.

Workshop Format

Attendees will be assigned to small groups and rotate through the labs. Laboratory sessions will be facilitated by workshop faculty members and will be conducted on Varian Trilogy, Elekta Synergy, Brainlab Novalis Classic and Accuray Tomotherapy HD Linacs. Beam scanning systems from iba Dosimetry, PTW, Standard Imaging, Sun Nuclear, and Accuray Tomotherapy will be used in demonstrations. Treatment planning systems from Brainlab, Elekta, Philips, Accuray and Varian will be used to demonstrate beam preparation for planning. Continental breakfasts, lunches and Friday dinner are included. The workshop will adjourn at 4:15 pm on Sunday.

Workshop Labs

Day Two

Lab A

Standard data collection
PDD & Profile
measurements

Lab B

Tomotherapy HD
Commissioning
measurements

Lab C

Electron data
collection

Lab D

Small field SRS beam
scanning (cones and
MLC based)

Lab E

Specialty measurements,
Dynamic Wedge, Linear array

Day Three

Labs F to J

- Processing beam data
- Interfacing with RTP systems
- Data conversion to 5 brands of treatment planning systems.

Educational Objectives

At the completion of this workshop, participants should have learned:

- The tasks required for collecting radiation treatment planning (RTP) data on 3D/2D scanning systems.
- The capabilities/limitations of accelerator beam data commissioning equipment.
- To perform general set-up and testing procedures for these systems.
- Requirements, precautions and recommendations of the AAPM TG-106 report and how it is being met with the currently available equipment.
- Conversion of data collections for treatment planning system beam modeling.

Faculty

Indra Das, PhD

Indiana University
Indianapolis, IN

John Gibbons, PhD

Mary Bird Perkins
Cancer Center
Baton Rouge, LA

Wolfram Laub, PhD, MBA

Oregon Health and
Science University
Portland, OR

Richard Crilly, PhD

Oregon Health and
Science University
Portland, OR

Tony He, PhD

Oregon Health and
Science University
Portland, OR

James Tanyi, PhD

Oregon Health and
Science University
Portland, OR

Continuing Education Credit

This activity is designed to provide continuing education in radiation therapy for practicing clinical medical physicists. Application has been made to CAMPEP for approval of up to 20 hours of Medical Physics Continuing Education Credit (MPCEC) for qualified medical physicists.

Workshop Schedule



Acknowledgements

Appreciation is expressed to Joe Conlon, MS, for his initiative and assistance with developing this workshop. Appreciation is also expressed to the Oregon Health & Science University for the use of their facilities and to Wolfram Laub, PhD, MBA for his cooperation and assistance with organizing the workshop. Support and participation by iba Dosimetry, PTW, Standard Imaging and Sun Nuclear is acknowledged and appreciated. Cooperation and support from several treatment planning vendors will be acknowledged at the workshop.

.....	Day One
2:30 pm	Registration
3:00 pm	Introduction and Workshop Overview
3:15 pm	Accelerator Beam Data Commissioning Overview Das <ul style="list-style-type: none"> • Background of TG-106 work • Defining the commissioning project • Dosimeter characteristics of clinical photon beams and RTP requirements • Shortcuts, pre-configured data and beam matching
3:45 pm	Small Field Measurements - Cone and MLC Data Collection Gibbons <ul style="list-style-type: none"> • Defining the commissioning project • Special equipment and RTP requirements • Relative measurements and calibration considerations
4:15 pm	Clinical Electron Beam Collection Laub <ul style="list-style-type: none"> • Defining the commissioning project • Electron data collection and RTP requirements • TG-51 data collection parameters
4:45 pm	Overview of Accelerator QA Das
5:15 pm	Beam Data Collection for Tomotherapy Units Crilly
5:45 pm	Break and Dinner (<i>pizza delivery</i>)
6:15 pm	Beam Scanner Set-up Orientation - Labs A to E
6:30 pm	Sun Nuclear/Varian Trilogy/Eclipse Das
6:45 pm	Tomotherapy Scanner/ Tomotherapy HD/Tomotherapy Crilly
7:00 pm	iba/Varian Trilogy/Pinnacle Gibbons
7:15 pm	Standard Imaging/Brainlab Novalis TX/i Plan Tanyi
7:30 pm	PTW/Elekta Synergy/Monaco Laub
7:45 pm	Wrap-up and Questions Team Leaders
	Adjourn for the Day
.....	Day Two
7:15 am	Coffee and Continental Breakfast
7:40 am	<i>First group depart for satellite facility</i>
8:00 am	Lab Session 1
9:30 am	Informal Discussion and Break
10:00 am	Lab Session 2
11:30 am	Lunch (<i>provided on site</i>)
12:15 pm	Lab Session 3
1:45 pm	<i>Transition to next lab</i>
2:00 pm	Lab Session 4
3:30 pm	Informal Discussion and Break
4:00 pm	Lab Session 5
5:30 pm	Question and Answer Session
6:15 pm	Adjourn for the Day
.....	Day Three
7:00 am	Coffee and Continental Breakfast
7:30 am	Special Scans and Relative Measurements Das <ul style="list-style-type: none"> • IMRT measurements • Output • Ancillary equipment, etc
8:00 am	Processing Beam Data Gibbons <ul style="list-style-type: none"> • Post measurement data handling overview
8:30 am	Lab Session 6
9:45 am	Informal Discussion and Break
10:00 am	Lab Session 7
11:15 am	Lunch (<i>provided on site</i>)
11:45 am	Lab Session 8
1:00 pm	Lab Session 9
2:15 pm	Informal Discussion and Break
2:30 pm	Lab Session 10
3:45 pm	Question and Answer Session
4:15 pm	Workshop Adjourned



Location & Accommodations

Workshop Location:

Oregon Health and
Science University
Doernbecher Childrens
Hospital
Room 11620
(auditorium)
700 SW Campus Dr.
Portland, OR 97239

Accommodations:

The Avalon Hotel and Spa
0455 SW. Hamilton Court
Portland, OR 97239
www.avalonhotelandspa.com
503-802-5800
Room Rate: \$109 Hillside King
\$129 Riverview King
Make reservations by 1/25/12.
For reservations contact Ana Maret,
Reservations Manager at
503-802-5808 or
reservations@avalonhotelandspa.com
Identify yourself as an MTMI attendee.
Transportation from the Avalon
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Registration

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Name: _____ degree/title _____

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