



Workshop on X-ray imaging dosimetry

Programme draft: 2024-10-10 (subject to changes)
Place: Helsinki university hospital, Finland
When: 20 – 22 November 2024
Workshop hotel: [Scandic Meilahti](#)
Linked with the EURAMET 22NRM01 TraMeXI -project
More information: <https://tramexi.com/workshop/>

Wednesday: 20 November 2024

X-ray dosimetry fundamentals and codes of practice

Lunch (not included)

12:00 – 12:10 Welcome

- Dosimetry as a bridge to overall beam characterisation (10 min)
Mika Kortensniemi HUS and Paula Toroi, HUS/STUK, Finland

12:10 - 13:15 Dosimetry equipment principles and operation

- 12:10 – 12:30 Ionization chambers (ICs) and X-ray multimeters (XMMs) (20 min)
Stefan Pojtinger, PTB, Germany
 - Principles, performance
- 12:30 – 12:50 Quantities and parameters beyond air kerma (20 min)
Milos Zivanovic, VINS, Serbia and Markus Borowski, SKBS, Germany
 - Measurement of tube voltage related quantities
 - Other quantities
- 12:50 – 13:05 Calibration and metrology (15 min)
Leon de Prez, VSL, the Netherlands
 - Primary standards, calibration conditions, assumptions, certificate
- Discussion (10 min)

Coffee break 13:15-13:45

13:45 - 15:25 Developments in mammography dosimetry

- 13:45 – 14:45 New CoP: EFOMP-AAPM breast dosimetry protocol (60 min)
Ioannis Sechopoulos, the Netherlands
 - Dosimetry model
 - Measurement of air kerma
 - Standard, contrast-enhanced and tomosynthesis

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- Determination of AGD
- 14:45 - 15:05 Novel radiation qualities and spectra measurements (20 min)
Elisabeth Salomon, PTB, Germany
 - Range of radiation qualities
 - Spectrometry methods
 - XMM results
- 15:05 – 15:15 XMM results in mammography (10 min)
Andrea Kojic, VINS, Serbia
- Discussion (10 min)

Break 15:25-15:45

15:45 – 17:00 Introduction on imaging modality specific measurement procedures

- 15:45 – 16:10 Overall introduction (25 min)
Luigi Rinaldi, OPBG, Italy
 - General measurement protocols, TRS-457
 - Conventional projection X-ray
 - What will change when XMMs are used instead of IC
- 16:10 – 16:30 Interventional (including C-arms, CBCT), (20 min)
Jouni Uusi-Simola, HUS, Finland
- 16:30 – 16:50 CT (including wide beams) (20 min)
Mika Kortensniemi, HUS, Finland
- Discussion (10 min)

17:00 – 18:00 Dosimetry companies presenting their products

- Presentations from sponsors: IBA, PTW, RaySafe and RTI
- Discussion 10 min

Social event 19:00 –

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Thursday: 21 November 2024

Practical approach and uncertainties

9:00 – 10:30 Patient specific dosimetry

- 9:00 – 9:20 What is patient dose? (20 min)
Bente Konst, Vestfold, Norway and Linköping, Sweden
 - Measurable quantity vrs. Organ doses
- 9:20 – 9:50 MC simulations: skin dose in interventional radiology (30 min)
Jonas Andersson, University of Umeå, Sweden
- 9:50 – 10:20 Use of AI in dosimetry (30 min)
Satu Inkinen, HUS, Finland
- Discussion (10 min)

Coffee break 10:30-11:00

11:00 – 12:10 Uncertainties

- 11:00 – 11:20 Theory and practice for air kerma and HVL (20 min)
Aino Tietäväinen, STUK, Finland
- 11:20 – 11:40 Practical example for clinical measurements (20 min)
Niko Kiiskinen, HUS, Finland
- 11:40 – 12:00 Practical example for skin dose (20 min)
Jonas Andersson, University of Umeå, Sweden
- Discussion 10 min

Lunch break 12:10 – 14:00

- Long lunch break with a walk outside

14:00 – 14:30 Raptor visit

14:30 – 18:00 Practical exercises

- 14:30 – 17:00 Practical exercises (live video connection+other material)
 - Measurement group: 1 with camera, 2 persons measuring.
 - 14:40 – 15:20 Conventional 25 min video+15 min for the analysis of results
Juha Peltonen, Jenna Tarvonen, 5 backstage participants
 - 15:25 – 16:05 Mammography 25 min video+15 min for the analysis of results
Anne-Mari Vitikainen, Jenna Tarvonen, 5 backstage participants
 - 16:10 – 16:50 Interventional 25 min video+15 min for the analysis of results
Touko Kaasalainen, Jenna Tarvonen, 5 backstage participants
 - Moderators: *Mika Kortnesniemi* (at lecture room), *Paula Toroi* (at site)
 - Short breaks between
- 17:00 – 18:00 Practical: calculation of uncertainties
Paula Toroi, Aino Tietäväinen, Niko Kiiskinen
 - Using the data collected in the practical session
 - Additional data from TraMeXI group

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Friday: 22 November 2024

Plans for future: targets and aims

9:00 – 9:50 Current status of dosimetry

- 9:00 – 9:20 Short introduction to current situation (20 min)
Miloš Živanović, VINS, Serbia and Markus Borowski, SKBS, Germany
 - Why we do dosimetry?
 - How we use dosimetric data?
 - What are current target uncertainties and why?
 - What is expected clinically?
 - What is currently provided by the manufacturers and calibration laboratories?
- 9:20 – 9:40 How to use calibration certificates in clinical practice (20 min)
Nikola Kržanović, VINS, Serbia / Paula Toroi, STUK/HUS, Finland
- Discussion 10 min

Short break 09:50 – 10:00

10:00 – 11:00 Deep learning-powered multimodality medical imaging

- Invited lecture
Prof. Habib Zaidi, Geneva, Switzerland

Coffee break 11:00 - 11:30

11:30 – 13:00 New aim for the future

- 11:30 – 12:00 Update of Code of Practice (30 min)
Miloš Živanović, VINS, Serbia
 - What changes are proposed?
 - Summary of discussions on practical sessions
- 12:00 – 13:00 Discussion
Moderators: Miloš Živanović, VINS, Serbia and Markus Borowski, SKBS, Germany
 - Feedback on update of protocols (to TraMeXI consortium)
 - What should be the target uncertainty?
 - What is clinically needed?
 - What is expected for different purposes (QA, research, optimization)?
- Conclusions and Farewell (10 min)
Mika Kortnesniemi HUS and Paula Toroi, HUS/STUK, Finland

The workshop ends.

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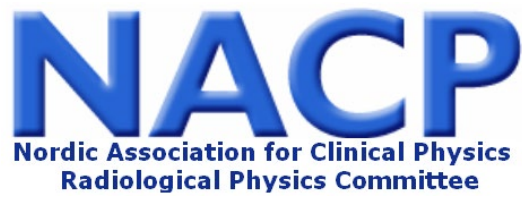
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