Optimisation in X-ray and Molecular Imaging 2020
Gothenburg, Sweden
20-22 April 2020

Programme
Preliminary as of 26 February 2020

Conference venue:
Conference Centre Wallenberg
Medicinaregatan 20 A
Gothenburg, Sweden
## Sunday, 19 April 2020

18.00- Get-together and registration

## Monday, 20 April 2020

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<tr>
<td>08.30-09.00</td>
<td>Registration</td>
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<tr>
<td>09.00-10.30</td>
<td>Conference opening and introductory session – Machine-learning-based segmentation and detection in medical imaging</td>
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<tr>
<td>09.00-09.15</td>
<td>Welcome and conference opening</td>
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<tr>
<td>09.15-10.00</td>
<td><strong>Invited speaker</strong></td>
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<tr>
<td></td>
<td>[O1-1] How can machine learning advance large population trials? – The Swedish CardioPulmonary biolmage Study (SCAPIS) Göran Bergström (University of Gothenburg and Sahlgrenska University Hospital) Sweden</td>
</tr>
<tr>
<td>10.00-10.15</td>
<td>[O1-2] Pulmonary nodule detection in chest CT using a deep learning-based reconstruction algorithm C Franck, M Spinhoven, A Snoeckx, H El Addouli, S Nicolay, A Van Hoyweghen, P Deak and F Zanca Belgium and Germany</td>
</tr>
<tr>
<td>10.15-10.30</td>
<td>[O1-3] Development of deep learning-based segmentation for $^{177}$Lu SPECT/CT based kidney dosimetry J Khan, T Rydén, M Van Essen, J Svensson and P Bernhardt Sweden</td>
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<tr>
<td>10.30-11.00</td>
<td>Coffee</td>
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<tr>
<td>11.00-12.30</td>
<td>Radiation dose and image quality in computed tomography</td>
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<tr>
<td>11.30-11.45</td>
<td>[O2-3] Effective dose and feasibility of scouts using real and alternative settings on different CT systems T M Svahn and J C Ast Sweden</td>
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<tr>
<td>11.45-12.00</td>
<td>[O2-4] Evaluating proposed dose and noise levels for chest CT A Dedulle, H Bosmans, J Jacobs and N Fitousi Belgium</td>
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<tr>
<td>12.00-12.15</td>
<td>[O2-5] Evaluation of the image quality in abdominal CT protocols based on Swiss diagnostic reference levels D Racine, A Viry, C Aberle, T Lima, R Treier, S T Schindera and F R Verdun Switzerland</td>
</tr>
<tr>
<td>12.15-12.30</td>
<td>[O2-6] Is the standard age classification correct for paediatric head CT examinations? A Dedulle, K Houbrechts, J Jacobs, H Bosmans and N Fitousi Belgium</td>
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<td>12.30-14.00</td>
<td>Lunch</td>
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<td>Time</td>
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<td>14.00-15.30</td>
<td><strong>Mammography and tomosynthesis</strong></td>
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<td>14.00-14.45</td>
<td><em>Invited speaker</em></td>
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<td>[O3-1] Breast tomosynthesis in screening – from optimization to a large screening trial. 14 years of experience from Malmö, Sweden</td>
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<td></td>
<td>Sophia Zackrisson (Lund University and Skåne University Hospital)</td>
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<td><em>Sweden</em></td>
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<td></td>
<td>M Mirzai, C Meltzer, J Vikgren, R Rossi Norrlund, B Gottfridsson, Å Allansdotter Johnsson, M Båth and A Svalkvist</td>
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<td><em>Sweden</em></td>
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<td>15.00-15.15</td>
<td>[O3-3] Visual grading assessment and rejection rate evaluation for digital mammography</td>
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<td>G Hellgren, M Dustler, S Zackrisson, A Bejnö and A Tingberg</td>
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<td>E Ramírez, S O Benavides, J Abella and W Lopera</td>
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<td><em>Sweden</em></td>
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<td>15.30-16.00</td>
<td><strong>Coffee</strong></td>
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<td>16.00-17.15</td>
<td><strong>Oral session 4</strong></td>
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<td><strong>Estimation of patient radiation doses in radiology</strong></td>
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<td>16.00-16.15</td>
<td>[O4-1] Retrospective analysis of whole body skeleton conventional radiography in myeloma staging</td>
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<td>L Weber and M Geijer</td>
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<td><em>Sweden</em></td>
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<tr>
<td>16.15-16.30</td>
<td>[O4-2] Comparison of organ doses in whole-body computed tomography scans of paediatric and adult patient models, estimated by different methods</td>
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<td>L C Chipiga, A V Vodovatov, V Yu Golikov and C Bernhardsson</td>
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<td><em>Russia</em> and <em>Sweden</em></td>
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<td>16.30-16.45</td>
<td>[O4-3] Measurement of radiation-induced microvascular changes in the skin after Chronic Total Occlusion Percutaneous Coronary Intervention (PCI-CTO)</td>
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<td>E Tesselaar, P Vorel Macková, C Pagonis, S Saers, M Sandborg and M Ahle</td>
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<td>16.45-17.00</td>
<td>[O4-4] Estimation of the effective doses from typical fluoroscopic examinations with barium contrast</td>
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<td>A V Vodovatov, V Yu Golikov, R R Akhmatdinov, I G Kamyshevskaia and C Bernhardsson</td>
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<td><em>Russia</em> and <em>Sweden</em></td>
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<td>17.00-17.15</td>
<td>[O4-5] Effective dose in paediatric interventional cardiology</td>
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<td>S Sarycheva</td>
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<td><em>Russia</em></td>
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<tr>
<td>17.15-17.30</td>
<td><strong>Introduction to the poster session</strong></td>
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<td>17.30-19.30</td>
<td><strong>Poster session</strong></td>
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<td>see separate list at the end of the programme</td>
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<td>Time</td>
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<td>08.30-09.00</td>
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<tr>
<td>09.00-10.30</td>
<td><strong>Oral session 5</strong>&lt;br&gt;Optimisation of molecular imaging, absorbed dose estimates and radiation risk models</td>
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<td>09.00-09.30</td>
<td><strong>Invited speaker</strong>&lt;br&gt;[O5-1] Personalised treatment planning for molecular radiotherapy.&lt;br&gt;Part 1: The Good – benefits and opportunities&lt;br&gt;Glenn Flux (Royal Marsden Hospital and Institute of Cancer Research)&lt;br&gt;United Kingdom</td>
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<td>09.30-09.45</td>
<td>[O5-2] Evaluation of the image quality in Monte Carlo based SPECT/CT reconstruction of $^{111}$In-octreotide&lt;br&gt;E Wikberg, M van Essen, T Rydén and P Bernhardt&lt;br&gt;Sweden</td>
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<td>09.45-10.00</td>
<td>[O5-3] IDAC-Alpha – an alpha dosimetry software for healthy tissue&lt;br&gt;M Andersson, T Meyer, E Koumarianou and S Mattsson&lt;br&gt;Sweden</td>
</tr>
<tr>
<td>10.00-10.15</td>
<td>[O5-4] Improved age and gender specific radiation risk models applied on cohorts of Swedish patients&lt;br&gt;M Andersson, K Eckerman, D Pawel, A Almén and S Mattsson&lt;br&gt;Sweden</td>
</tr>
<tr>
<td>10.15-10.30</td>
<td>[O5-5] X-ray and molecular imaging during pregnancy and breastfeeding – when should we be concerned?&lt;br&gt;S Mattsson and S Leide-Svegborn&lt;br&gt;Sweden</td>
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<td>10.30-11.00</td>
<td>Coffee</td>
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<td>11.00-12.30</td>
<td><strong>Oral session 6</strong>&lt;br&gt;Software and online tools enabling studies of image quality and radiation dose</td>
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<td>11.00-11.15</td>
<td>[O6-1] Virtual clinical trials in medical imaging optimization&lt;br&gt;P R Bakic, B Barufaldi, M Dustler, A D A Maidment, S Zackrisson and A Tingberg&lt;br&gt;USA and Sweden</td>
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<td>11.15-11.30</td>
<td>[O6-2] ViewDEX 3.0 – recent development of a software application facilitating assessment of image quality and observer performance&lt;br&gt;A Svalkvist, S Svensson, T Hagberg and M Båth&lt;br&gt;Sweden</td>
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<td>11.30-11.45</td>
<td>[O6-3] A novel online framework for creating and performing reader studies in medical imaging&lt;br&gt;M Dustler, G Hellgren, P Bakic, P Kragsterman, J Norling, I Servan Rivero and S Zackrisson&lt;br&gt;Sweden and USA</td>
</tr>
<tr>
<td>11.45-12.00</td>
<td>[O6-4] Evaluation of VGC Analyzer by comparison with gold standard ROC software and analysis of simulated visual grading data&lt;br&gt;J Hansson, L G Månsson and M Båth&lt;br&gt;Sweden</td>
</tr>
<tr>
<td>12.00-12.15</td>
<td>[O6-5] An innovative personal online dosimetry system using computational calculations for personnel in interventional radiology&lt;br&gt;M Andersson, U O’Connor, M Abdelrahman, A Camp, V García, M Amor, M Ginjaume, F Vanhavere and A Almén&lt;br&gt;Sweden, Ireland, Belgium and Spain</td>
</tr>
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</table>
Clinical optimization in fluoroscopic and interventional radiology by retrospective studies of DICOM Radiation Dose Structured Reports
C Granberg, M Hellström and J Andersson
Sweden

Lunch

Addressing the potential for improved education, diagnostics and therapy

Invited speaker

[O7-1] Personalised treatment planning for molecular radiotherapy. Part 2: The Bad – risks and threats
Glenn Flux (Royal Marsden Hospital and Institute of Cancer Research)
United Kingdom

[O7-2] Evaluation of the quality of education in courses on radiation protection in Germany
P Strauß, R Eßeling, G Stamm and H Lenzen
Germany

[O7-3] Evaluation of the quality of education in manufacturer’s initial trainings for radiographic devices in Germany
P Strauß, R Eßeling, G Stamm and H Lenzen
Germany

[O7-4] Improving image quality by increasing the amount of light in the reading room
P Sund
Sweden

Announcements

Coffee

Quality control, quality assurance and characterisation of medical imaging systems

[O8-1] A Swedish implementation of manufacturer specific quality assurance for radiological equipment
H Sundström, J Sjöberg and J Andersson
Sweden

[O8-2] Automated QC for intervention system and mammography system
T Visanuyanont, P Gluchowski, T Moberg and E Hillberg
Sweden

[O8-3] Signal-to-noise ratio rate measurement in fluoroscopy for quality control and teaching good radiological imaging technique
H Elgström, E Tesselaar and M Sandborg
Sweden

[O8-4] Evaluation of spectral imaging with respect to iodine-concentration quantification and HU-values for monoenergetic reconstructions on six CT scanners from two vendors
N Sogge, I H R Hauge, H K Andersen, K N Bolstad, A Dybwald, S Jenu, H E S Pettersen, S Flatabø and A C T Martinsen
Norway

[O8-5] Frequency response and distortion properties of reconstruction algorithms in computed tomography
J Larsson, M Båth and A Thilander Klang
Sweden

Conference dinner
Villa Belparc, A O Elliots väg 10, Gothenburg, Sweden
### Wednesday, 22 April 2020

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<tbody>
<tr>
<td>08.00-08.30</td>
<td>Registration</td>
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</table>
| 08.30-10.00 | **Oral session 9**  
AI and machine learning for optimisation of medical imaging |
| 08.30-09.15 | *Invited speaker*  
[O9-1] From image quality to care outcome – evolved optimisation process supported by AI/Deep Learning  
Mika Kortesniemi (HUS Medical Imaging Center, University of Helsinki)  
*Finland* |
| 09.15-09.30 | [O9-2] CT image denoising with a novel deep learning-based reconstruction technique: a phantom study  
C Franck, P Deak, G Zhang and F Zanca  
*Belgium and Germany* |
| 09.30-09.45 | [O9-3] The deep learning algorithm ConvIP for improvement of $^{177}$Lu SPECT images reconstructed with sparse acquired projections  
T Rydén, M van Essen, I Marin, J Svensson and P Bernhardt  
*Sweden* |
| 09.45-10.00 | [O9-4] AI and deep learning in diagnostic radiology – is this the next phase of scientific and technological development?  
B M Moores  
*United Kingdom* |
| 10.00-10.30 | Coffee                                                               |
| 10.30-11.45 | **Oral session 10**  
Strategies for optimisation of medical imaging |
| 10.30-10.45 | [O10-1] Underexposures are a major image quality problem in musculoskeletal radiography  
M Geijer  
*Sweden* |
J Brandberg, H Milde and A Thilander Klang  
*Sweden* |
| 11.00-11.15 | [O10-3] Optimisation of examination protocols for computed tomography – a tentative working process  
J Elgqvist, A Svalkvist and A Thilander Klang  
*Sweden* |
J Ivarsson, A Almén, M Falkenberg, C Lundh and M Båth  
*Sweden* |
C Lundh, J Ivarsson, M Falkenberg, M Båth and A Almén  
*Sweden* |
| 11.45-12.00 | Announcements and conference closing                                 |
Poster session – Monday, 20 April 2020, 17.30-19.30

[P-1] Semi-automated 3D segmentation of pelvic region bones in CT volumes for the annotation of machine learning datasets
J Jeuthe, J C González Sánchez, M Magnusson, M Sandborg, Å Carlsson Tedgren and A Malusek
Sweden

[P-2] Segmentation of pelvic region bones in medical dual-energy computed tomography volumes using the 3D U-Net
J C González Sánchez, M Magnusson, M Sandborg, Å Carlsson Tedgren and A Malusek
Sweden

[P-3] Accuracy of CT numbers obtained by DIRA and Monoenergetic Plus algorithms in dual-energy computed tomography
A Malusek, M Magnusson, M Sandborg, G Alm Carlsson, L Henriksson and Å Carlsson Tedgren
Sweden

M Magnusson, G Alm Carlsson, M Sandborg, Å Carlsson Tedgren and A Malusek
Sweden

[P-5] On the possibility to resolve gadolinium- and cerium-based contrast agents from their CT numbers in dual-energy computed tomography
A Malusek, L Henriksson, P Eriksson, N Dahlström, Å Carlsson Tedgren and K Uvdal
Sweden

[P-6] Comparison of metal artefacts using different dual-energy CT techniques
E Pettersson, A Bäck and A Thilander-Klang
Sweden

[P-7] Investigation of a novel metric for direction of distortion power of nonlinear medical imaging algorithms
J Larsson, M Båth and A Thilander Klang
Sweden

[P-8] Creating an energy and angle independent 4π silicon dosemeter for quality control of CT/CBCT using a CAD and MC simulation approach
L Herrnsdorf, M Andersson, M Gunnarsson and S Mattsson
Sweden

[P-9] Quantitative evaluation of a photon-counting mammography and direct-digital mammography unit prior to 3D imaging
T M Svahn, J Riffel, R Gordon and M Hartbauer
Sweden, Austria, Germany and USA

[P-10] Influence of arm positions on effective dose during CT scans of neck, chest, abdomen/pelvis on different CT units
T M Svahn and J C Ast
Sweden

[P-11] Phantom-based performance and dose comparison of ultra-low dose computed tomography (CT), standard dose CT and digital radiography
T M Svahn, T Sjöberg, K Shahged and J Nordström
Sweden
[P-12] Comparison and optimization of imaging techniques of multiple digital radiography systems for scoliosis
T M Svahn, K Shahgeldi, D Axþåge, D Dackell and M Stenström
Sweden

D Z Joseph, A A Aminu, I Garba, M S Umar and S S Bature
Nigeria

[P-14] The relationship between mean glandular dose and compressed breast thickness as a panacea for dose optimisation in mammography
J Josephine, C C Nzotta, D Z Joseph
Nigeria

[P-15] Quantification of pulmonary pathology in cystic fibrosis – comparison between digital chest tomosynthesis and computed tomography
C Meltzer, M Gilljam, J Vikgren, R Rossi Norrlund, K Vult von Steyern, M Båth and Å Allansdotter Johnsson
Sweden and Norway

[P-16] Comparison of two chest tomosynthesis cystic fibrosis scoring systems and High Resolution Computed Tomography Brody scoring
R Rossi Norrlund, C Meltzer, C Söderman, Å Allansdotter Johnsson, J Vikgren, D Molnar, M Gilljam and M Båth
Sweden

[P-17] Evaluation and optimization of image quality from the quality controls of digital radiography equipment in a diagnostic imaging service at Fundación Valle del Lili
E J Durán, S Benavides, E Ramirez, R Chamorro, A Quiroga and W Lopera
Colombia

[P-18] Radiological implications of radiation dose distribution in paediatric patients undergoing diagnostic x-ray examination in some Nigerian teaching hospitals
C A Aborisade
Nigeria

[P-19] Dose evaluation and proposal of local diagnostic reference levels in paediatric cardiac catheterization
M Hultenmo, A Nygren, B Söderberg and H Wåhlander
Sweden

[P-20] Establishment of diagnostic reference levels for radiography examinations in Bosnia and Herzegovina: results from IAEA project
A Beganović, A Drljević, I Lasić, S Galić, E Dedović, L Ibišimović, J Davidović, G Vuleta, A Nuhan, A Duraković, J Praskalo, J Marinković and J Vassileva
Bosnia and Herzegovina and Austria

[P-21] Establishment of diagnostic reference levels for computed tomography in Bosnia and Herzegovina: results from IAEA project
A Beganović, A Drljević, I Lasić, S Galić, E Dedović, L Ibišimović, J Davidović, G Vuleta, A Nuhan, A Duraković, J Praskalo, J Marinković and J Vassileva
Bosnia and Herzegovina and Austria

[P-22] Exposure of the Swiss population in 2018 by medical X-rays
A Viry, J Bize, P R Trueb, B Ott, S Schindera, D Racine, F R Verdun and R LeCoultre
Switzerland
[P-23] Patient doses and optimisation in common dental radiographic and panoramic examinations
I Shatskiy
Russian Federation

[P-24] Influence of the patient weight on the conversion coefficients from dose-area product to the effective dose
V Golikov
Russian Federation

L Strandberg, P Jonasson and M Larsson
Sweden

[P-26] Assessment of patient’s and occupational exposure from PET/CT with various radiopharmaceuticals
H Salah, F H Mayhoub, A Sulieman, H I Al-Mohammed, M Alkhorayef and B Moftah
Saudi Arabia, Sudan and United Kingdom

[P-27] The potential to use TLD measurements in purpose to validate the occupational radiation protection at the department of nuclear medicine
I Nilsson, J Himmelman, J Khan and J Dalmo
Sweden

M Larsson, P Jonasson and C Lundh
Sweden

[P-29] Evaluation of annual radiation exposure in cardiac catheterization department in Saudi Arabia
A Sulieman, F Mayhoub, H Salah, M Alkhorayef, H Al-mohammed and B Moftah
Saudi Arabia

[P-30] Staff dose evaluation by application of radiation protection during ERCP procedures performed with a mobile C-arm
A Österlund, W Drohn, H Hödlmoser, M Greiter, M Schmid and H-E Källman
Sweden and Germany

[P-31] Radiation leakage in two CT rooms due to construction failure
M Bergfjord and A Mamour
Sweden

[P-32] High-sensitive biomarkers of blood total antiradical activity in mice exposed to gamma irradiation
T Sanikidze, G Ormotsadze, I Chkhikvishvili, E Shekiladze, M Gogebashvili, E Lomadze and M Buleishvilii
Georgia

[P-33] Offline adaptive radiation therapy in the treatment of head and neck cancer using MIMvista Software
Y Herrassi, Y Raoui, S Moujahid, S Jебbari, R Sebihi and K Tanouti
Morocco

[P-34] Evaluation of Iterative Model-Based Reconstruction (IMR) in abdominal Computed Tomography imaging at two different dose levels
E Hettinger, M-L Aurumskjöld, H Sator, F Holmquist, D Svärd and P Timberg
Sweden