



Contribution ID: 18

Type: **Contributed Talk**

Experimental study of beam hardening artefacts in photon counting breast computed tomography

Saturday 24 February 2007 12:00 (20 minutes)

In the framework of a national project for new imaging techniques for breast cancer diagnosis we are implementing an X-ray Computed Tomography (CT) system, with a design resolution of 1 mm, on the gantry of a dedicated scintillator based single photon emission tomography (SPECT) system for breast Tc-99m imaging, to allow for anatomical co-registration of the radionuclide tomographic slices recorded with the SPECT system. We studied the impact of using a semiconductor based single photon counting detector as detector unit in our X-ray CT system. The detector is a 0.7 mm thick silicon pixel detector (256x256 pixel, 55 micron pitch) bump-bonded to the Medipix2 photon counting readout chip realized by the Medipix2 collaboration. Specifically, we evaluated the beam hardening "cupping" artefact using homogeneous PMMA cylinders of 12 cm and 14 cm diameter, used as uncompressed breast tissue phantoms, imaged with the 14 mm x 14 mm silicon pixel detector and two X-ray tubes: either a Mo-anode tube or a W-anode tube, operated at 50 kVp, with a 2 mm Al equivalent filtration.

Author: MONTESI, Maria Cristina (INFN Napoli)

Co-author: RUSSO, Paolo (INFN Napoli)

Presenter: MONTESI, Maria Cristina (INFN Napoli)

Session Classification: Session 11