4D-PET- AND SPECT-PHANTOM MODEL COMPOUNDS WITH ANATOMIC REALISTIC CONTOURS

Ref-No: TA-PVA1591

BACKGROUND

The invention relates to a method which produces repeated and reproducible 4D-Movements of a phantom model for measurements in PET, SPECT, CT and radio oncologic accelerators.

The modern diagnostic of oncologic diseases, anatomical localization and metabolism of tumors employs a combination of positron emission tomography (PET) and computed tomography in the form of modern PET/CT devices and single-photon-emission-computed-tomography (SPECT).

PROBLEM

The prior art contains algorithms for detecting Surrogat-signals of movable structures. Their testing, validation and development depends on models of so called phantoms, which allow a successful plan of therapy because of testing on patients and anatomic is not feasible. The precision of the results of current hybrid medical imaging and the following radiotherapeutic treatment are strongly influenced by movable anatomic structures. Because of the restricted resolution, the particle volume effect has to receive special attention. Furthermore through the PET/CT visible effective, size of the metabolic active areal is an important parameter.

SOLUTION

The invention relates to a method which produces repeated and reproducible 4D-movements of a phantom model for measurements in PET, SPECT, CT and radio oncologic accelerators. According to the invention, the usable phantoms illustrate realistic tumor geometries without interfering glass and plastic partitions. With the help of the invention, PET-, SPECT- and CT-data can be evaluated. Additionally new algorithms of reconstruction and the influence of anatomic movements on medical imaging can be tested for all of the three techniques. With the help of a kinematic concatenation which consists of two rotational and one prismatic joint, the 3D-movements of the phantom models can be adapt on trajectories analog to the human respiration.

PVA Mecklenburg-Vorpommern AG
Christian Tholen
+49 381 497474-38
c.tholen@pva-mv.de
www.pva-mv.de

DEVELOPMENT STATUS

Feasibility

PATENT SITUATION

DE 10 2014 114 805 granted
WO 00 2016 058 898 pending

CATEGORIES

//Diagnostics //Medical imaging //Sensor systems technology and measuring instruments
ADVANTAGES

- Reproducible phantoms with anatomic realistic contours without “Cold-Wall-Effects”
- Precise tumor size determination
- Unified array of the models for hybrid medical imaging and radiotherapeutic treatments
- Reproducible validation

SCOPE OF APPLICATION

- Medicine
- Instrument engineering
- Measurement technology
- Medical imaging
- Nuclear medicine

SERVICE

- Disposition
- Concession agreement
- Development cooperation