

Request Information

Permalink

Device and Method for Measuring Beam Quality in CT

Tech ID: 22455 / UC Case 2010-719-0

ABSTRACT

Researchers at the University of California, Davis have invented a device and methods for half-value layer (HVL) characterization in computed tomography (CT) to allow a medical physicist to measure the HVL of an X-ray system while the X-ray tube is rotating - that is, during its normal operation without the necessity to make the x-ray tube stationary.

FULL DESCRIPTION

For medical imaging applications which use X-rays, part of the necessary characterization of the X-ray beam "quality" required the measurement of the half value layer (HVL), which is the thickness, typically in aluminum, which reduces the X-ray intensity of the X-ray beam by 50%. The HVL is routinely measured in projection X-ray imaging situations such as in mammography, radiography, and fluoroscopy. However, for computed tomography (CT), the X-ray source rotates around the gantry and this precludes the measurement of HVL using the standard set-up of an exposure meter with aluminum filters.

Researchers at the University of California, Davis have developed a device and methods for measuring HVL in a CT machine while the X-ray tube is rotating. Therefore, the CT gantry does not need to be placed in a parked position, and a service engineer is not required to help in the measurements. This invention, therefore, makes the measurement of the HVL in CT practical, automated, accurate, and fast. Our researchers have prototyped a case device to be used with a real-time dosimeter; accompanying method packages for estimation of the HVL from the real-time dose measurements have also been developed.

APPLICATIONS

Measurement of X-ray beam quality in CT scanners and in projection radiography settings (including fluoroscopy, radiography and mammography) and enable rapid and reliable characterization of the x-ray beam.

FEATURES/BENEFITS

- ▶ Allows HVL measurements to be preformed with one rotation of the CT scanner
- ▶ Enables rapid and reliable characterization of the x-ray beam that is used in CT scanners
- ▶ Adapts easily to stationary X-ray sources (e.g. fluoroscopy, radiography and mammography) to obtain HVL measurements

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,008,264	04/14/2015	2010-719

CONTACT

Amir J. Kallas
ajkallas@ucdavis.edu
tel: .



INVENTORS

- ▶ Boone, John M.
- ▶ Burkett, Jr., George W.
- ▶ McKenney, Sarah E.

OTHER INFORMATION

KEYWORDS

Computed Tomography (CT), Radiography, X-ray Beam Quality, Half layer value, HVL Characterization

CATEGORIZED AS

- ▶ **Imaging**
 - ▶ Medical
- ▶ **Medical**
 - ▶ Devices
- ▶ **Sensors & Instrumentation**
 - ▶ Medical

RELATED CASES

2010-719-0

University of California, Davis
Technology Transfer Office
1850 Research Park Drive, Suite 100, ,
Davis, CA 95618

Tel: 530.754.8649
techtransfer@ucdavis.edu
<https://research.ucdavis.edu/technology-transfer/>
Fax: 530.754.7620

© 2012 - 2015, The Regents of the University of California
[Terms of use](#)
[Privacy Notice](#)