DETERMINING A TARGET-TO-SURFACE DISTANCE AND USING IT FOR REAL TIME ABSORBED DOSE CALCULATION AND COMPENSATION

(57) Abstract: An apparatus and method for determining a target-to-surface distance (TSD) between a target region in a body and an actual point of entry of a radiation beam into the body from a radiation source. The method may include determining an absorbed dose of radiation from the radiation beam at the target region using the TSD. The method may also include compensating for both the motion of the target region with respect to the radiation source, and the motion of surrounding tissue relative to the target region. The apparatus may include a sensor system to determine the actual point of entry of the radiation beam into the body.
Published: (88) Date of publication of the international search report:
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

15 January 2009
INTERNATIONAL SEARCH REPORT

International application No. PCT/US 07/18728

A. CLASSIFICATION OF SUBJECT MATTER

<table>
<thead>
<tr>
<th>IPC(8)</th>
<th>USPC</th>
<th>Classification</th>
</tr>
</thead>
</table>

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8) - G21K 5/10 (2008.04)
USPC - 378/69

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
IPC(8) - G21 K 5/10 (2008.04)
USPC - 378/69,65,69,207

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWest US PAT, US PGPUB, US OCR, EPO, JPO, Google Scholar. Keywords: radiation, ionizing energy, gamma ray, source, tube, dose, dosage, plan, calculation, calculate, calculating, absorb, absorbing, absorption, target-to-surface, TSD, motion, moving, movement, move, compensate, compensating

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US 6,540,756 B1 (VAUGHAN) 01 April 2003 (01.04.2003) coll 6, in 28-44; coll 8, in 8-24, FIG. 1</td>
<td>1 (2) 2-55</td>
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<td>Y</td>
<td>US 2006/0074292 A1 (THOMPSON et al.) 06 April 2006 (06.04.2006) para [0002], [0006], [0008], [0009], [0013], [0032], [0036], [0040], [0042], [0044], [0046], [0048], [0051], [0052], [0124], and [0140], [0150]</td>
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<tr>
<td>Y</td>
<td>US 6,889,695 B2 (PANKRATOV et al.) 10 May 2005 (10.05.2005) coll 3, in 65 - col 4, in 51; FIG 1</td>
<td>47-49</td>
</tr>
</tbody>
</table>

D. Further documents are listed in the continuation of Box C.

Date of the actual completion of the international search
04 November 2008 (04.11.2008)

Date of mailing of the international search report
17 November 2008

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