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Schmidt et al.

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- (54) **TOPOGRAM FROM A SPIRAL RECONSTRUCTION**
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- (56) **References Cited**
U.S. PATENT DOCUMENTS
5,412,702 A * 5/1995 Sata A61B 6/027 378/20
5,666,391 A * 9/1997 Ohnesorge A61B 6/5282 378/7
(Continued)
FOREIGN PATENT DOCUMENTS
CN 101249000 A 8/2008
CN 102327124 A 1/2012
(Continued)
OTHER PUBLICATIONS
DE Office Action dated Aug. 23, 2013.
(Continued)

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(57) **ABSTRACT**
A computed tomography system is disclosed, along with a method and computer program product. An embodiment uses such a spiral acquisition to reconstruct a spatial three-dimensional image of the examination region. The method also includes establishing a topogram of the examination region by parallel projection of the image along a projection direction. An embodiment of the invention allows distortion-free acquisition of a topogram, as a reconstructed spatial three-dimensional image can simply be projected in a parallel manner along a projection direction. An embodiment also allows multiple topograms to be established easily with just one acquisition, in that the reconstructed image of the examination region is projected in a parallel manner along different directions. An embodiment of the invention also allows particularly fast acquisition of a topogram, in particular in the clinical environment, as the rotating part of the gantry does not have to be stopped for the spiral acquisition.

14 Claims, 2 Drawing Sheets

