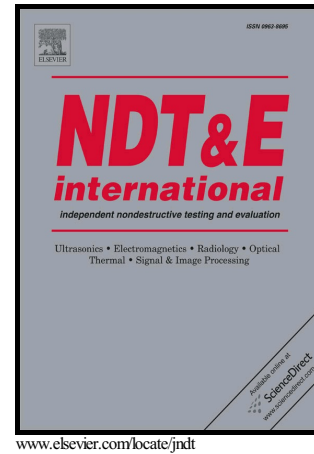


Author's Accepted Manuscript

Artifacts Correction Method for Fan-beam CT with Projections Asymmetrically Truncated on Both Sides

Min Yang, Xu Han, Xiaojun Wu, Gang Zhao, Dongtao Wei, Tian Lang, Shunli Zhang



PII: S0963-8695(17)30007-5
DOI: <http://dx.doi.org/10.1016/j.ndteint.2017.01.002>
Reference: JNDT1830

To appear in: *NDT and E International*

Received date: 4 February 2016
Revised date: 29 December 2016
Accepted date: 3 January 2017

Cite this article as: Min Yang, Xu Han, Xiaojun Wu, Gang Zhao, Dongtao Wei, Tian Lang and Shunli Zhang, Artifacts Correction Method for Fan-beam CT with Projections Asymmetrically Truncated on Both Sides, *NDT and E International* <http://dx.doi.org/10.1016/j.ndteint.2017.01.002>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and a review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Artifacts Correction Method for Fan-beam CT with Projections Asymmetrically Truncated on Both Sides**Min Yang^{a*}, Xu Han^a, Xiaojun Wu^{b*}, Gang Zhao^a, Dongtao Wei^c, Tian Lang^d, Shunli Zhang^e**^aSchool of Mechanical Engineering and Automation, Beijing University of Aeronautics and Astronautics, Beijing 100191, China^bDepartment of Earth Sciences and Institute of Energy Sciences, Nanjing University, Nanjing 210093, China^cReservoir Description Key Laboratory CNPC, Lanzhou 730000, China^dBeijing Martial Delegate Agency of the PLA Army, Beijing 100012, China^eSchool of Information Science and Technology, Northwest University, Xi'an 710127, China
minyang.ndt@263.net

nj_wuxiaojun@hotmail.com

Corresponding authors.*Abstract**

In fan-beam CT scanning, the scanned field of view is determined by the fan-beam angle and the effective length of a linear array detector. Therefore, when an object extends outside the scanned field of view, CT projection data acquired by the detector will not be complete and is truncated abruptly at the projection boundaries. Furthermore, due to mechanical misalignment of X-ray source, object and the linear array detector, the length of the truncated data on the left side is not equal to its length on the right side. This asymmetrical truncation on both sides will bring out dual bright-band artifacts in the reconstructed images. The purpose of this paper is to develop a method of eliminating these artifacts by projection extension techniques. We first extend the truncated projection unilaterally by using geometrical symmetry property of the fan-beam scanning. Through this method, the projection center of rotation is adjusted to the

Download English Version:

<https://daneshyari.com/en/article/4925209>

Download Persian Version:

<https://daneshyari.com/article/4925209>

[Daneshyari.com](https://daneshyari.com)