



X-Ray Phase Contrast Imaging Using Standard Equipment

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WARF: P130340US01

Inventors: Guang-Hong Chen

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a method for generating X-ray phase contrast images using conventional X-ray imaging systems.

Overview

Phase contrast imaging exploits differences in the refractive index of materials to differentiate and image them. Recently, X-ray phase contrast imaging has attracted a great deal of attention. In the process, an X-ray detector converts phase variations into intensity variations as the beams pass through a subject.

Compared to normal absorption X-ray imaging, phase contrast imaging provides higher contrast and makes it easier to see smaller details. However, a major disadvantage is the sophisticated equipment that is required (e.g., synchrotron, high resolution detectors, etc.). This has hampered widespread implementation.

To be more practical in a clinical setting, a new approach must not involve specialized equipment or increased dose exposure to patients.

The Invention

A UW-Madison researcher has developed a method for generating X-ray phase contrast images from conventional X-ray attenuation data.

First, calibration factors are obtained using a phantom. The patient or object then is X-rayed to acquire attenuation data at two different energy levels. Images are reconstructed at the different energy levels to produce spatial maps. Based on the calibration factors and spatial maps, a phase contrast image can be produced.

Applications

- Phase contrast imaging software
- Any dual-energy computed tomography (CT) system
- Diagnostic CT, image-guided interventions and radiation therapy, tomosynthesis used in breast imaging, diagnosis of diseases like gout and arthritis

Key Benefits

- Practical in a clinical setting
- Requires no specialized hardware or modifications

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Additional Information

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For More Information About the Inventors

- [Guang-Hong Chen](#)

Related Technologies

- [WARF reference number P130360US01 describes a method for generating multi-energy medical images of a subject using a single-energy X-ray source.](#)

Tech Fields

- [Medical Imaging : CT](#)
- [Medical Imaging : X-ray](#)

For current licensing status, please contact Jeanine Burmania at jeanine@warf.org or 608-960-9846

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