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X-ray-induced Acoustic Computed Tomography (XACT) for In Vivo Dosimetry

Tech ID: 34113 / UC Case 2021-729-0

BRIEF DESCRIPTION

This technology leverages X-ray-induced acoustic phenomena for real-time, in-line verification of photon beam location and dose during cancer radiotherapy.

FULL DESCRIPTION

X-ray-induced Acoustic Computed Tomography (XACT) utilizes the conversion of X-rays to acoustic waves through thermoelastic expansion, enabling the imaging of acoustic waves generated by X-ray absorption in tissues. This process allows for the monitoring of radiation dose and beam alignment during radiotherapy, ensuring precise targeting and dose delivery to cancerous tissues.

SUGGESTED USES

- » Real-time dosimetry in radiotherapy for cancer treatment.
- » Enhancement of precision in radiation therapy through in-line verification.
- » Integration into existing radiotherapy equipment to improve treatment outcomes.
- » Development of new radiotherapy devices with built-in XACT technology.

ADVANTAGES

- » Real-time monitoring of radiation dose and beam location.
- » Non-invasive in vivo dosimetry for enhanced treatment safety.
- » Ability to detect geometric and morphological misalignments of the X-ray field.
- » Improves the precision and effectiveness of radiotherapy treatments.
- » Linear correlation between acoustic signal strength and X-ray dose deposition for accurate dosimetry.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	12611553	04/28/2026	2021-729

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OTHER INFORMATION

CATEGORIZED AS

- » Computer
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- » Medical
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