

# A Combined Time-Walk and Timing-Shift Correction Method for Dual-Ended Readout TOF-DOI PET Detector

Tech ID: 34060 / UC Case 2024-9B6-0

#### **ABSTRACT**

Researchers at the University of California, Davis have developed a technology that significantly improves the timing and spatial resolution of PET scans using dual-ended readout detectors.

## **FULL DESCRIPTION**

The technology pertains to advanced positron emission tomography (PET) systems equipped with dual-ended readout detectors, designed to enhance both timing and spatial resolution. By employing corrected timing information generated through methods such as time-walk correction and timing-shift correction, these systems can more accurately identify and log the times at which photons are received. This leads to improved image quality by accurately estimating the location of positron-electron annihilations, crucial for detailed medical imaging.

#### **APPLICATIONS**

- ▶ Medical diagnostic imaging for detecting, diagnosing, and monitoring diseases.
- ▶ Research applications in biology and pharmacology for studying physiological processes.
- ▶ Advanced imaging techniques in oncology for tumor detection and treatment monitoring.

# FEATURES/BENEFITS

- ▶ Enhanced timing resolution through corrected timing information.
- ▶ Improved spatial resolution by accurately estimating annihilation events.
- ▶ Ability to use various scintillation crystal elements for versatile imaging needs.
- ▶ Advanced processing for depth-of-interaction layer analysis, improving image detail.

#### **PATENT STATUS**

Patent Pending

#### CONTACT

Andrew M. Van Court amvancourt@ucdavis.edu



#### **INVENTORS**

- ► Cherry, Simon R.
- Du, Junwei
- ▶ Qi, Jinyi
- ▶ Wang, Haibo

# OTHER INFORMATION

#### **KEYWORDS**

positron emission
tomography, dual-ended
readout detectors, timing
resolution, spatial
resolution, scintillation
crystal, silicon
photomultiplier, timewalk correction, timingshift correction,
coincidence event
detection, medical

## **CATEGORIZED AS**

Medical

imaging

Devices

Imaging

#### **RELATED CASES**

2024-9B6-0

#### ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ Techniques for Improving Positron Emission Tomography Image Quality and Tracking Real-Time Biological Processes
- ▶ Real-Time Tissue Assessment During Surgical Procedures
- ▶ Auto Single Respiratory Gate by Deep Data Driven Gating for PET
- ▶ Unsupervised Positron Emission Tomography (PET) Image Denoising using Double Over-Parameterization

University of California, Davis
Technology Transfer Office

1 Shields Avenue, Mrak Hall 4th Floor,

Davis, CA 95616

Tel:

© 2025, The Regents of the University of California

530.754.8649

Terms of use

techtransfer@ucdavis.edu

Privacy Notice

https://research.ucdavis.edu/technology-

transfer/

Fax:

530.754.7620