



Improving lesion detectability

Philips Astonish TF

Lesion detection is paramount for great imaging performance. A recent study¹ demonstrated the benefits of Time-of-Flight (TOF) in PET imaging. By offering exceptional imaging performance, TOF shows a strong improvement in lesion detectability.

Introducing Astonish TF – Philips proprietary TOF technology – offering improved contrast, low dose capability, and high-speed acquisition and reconstruction for PET studies compared to non-TOF technology. Astonish TF is the only TOF technology to offer full-fidelity list mode reconstruction, maintaining quantitative accuracy, with exceptional reconstruction speed (as fast as 30 seconds per bed).

Key advantages

- Up to 30% improved contrast compared to non-TOF technology for exceptional image quality
- Up to 5x higher sensitivity than non-TOF may help manage radiopharmaceutical dosing
- Full-fidelity list mode reconstruction enhances image quality and SUV accuracy in seconds

PHILIPS
sense and simplicity

Less is more

Philips Astonish TF improves the signal to noise ratio, resulting in high image quality and improved accuracy. The proprietary reconstruction design uses full-fidelity list mode reconstruction to improve image quality and SUV accuracy in seconds.



Sharper images for increased diagnostic confidence

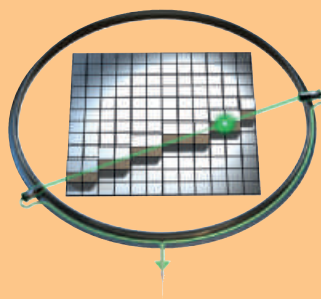
Astonish TF enhances image quality by reducing noise and providing higher sensitivity. These superb images help improve lesion detectability and localization for increased diagnostic confidence. Additionally, the improved imaging performance aids the precision of treatment planning in radiation therapy that can help preserve healthy tissue during treatment.

Astonish TF offers up to 30% improved contrast compared to non-TOF images and allows clinicians to see fully reconstructed images within minutes of acquisition. Additionally, 4D TOF offers further gains to account for patient movement for up to 50% improvement in contrast.

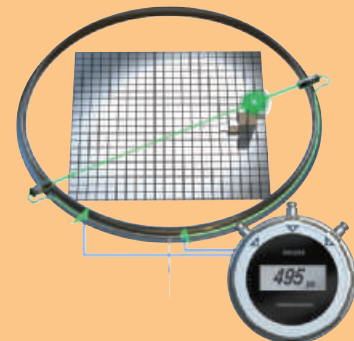
Every picosecond matters

Since the first release of TOF in 2006, Philips has continued to push the envelope of TOF technology. With 495ps timing resolution on all new Philips TOF systems, Astonish TF provides the fastest timing resolution available today, leading to better localization of events for high image quality. This advantage has been demonstrated to improve sensitivity by up to 2 times in average patients and up to 5 times in larger patients.

Other TOF technologies offer slower timing resolution, providing a more limited localization along the line of response.



In conventional PET imaging, it's only possible to know that a coincident event has taken place on the line of response, but not the actual location of the event.



Time-of-Flight technology uses the actual time difference between the detection of coincident events to more accurately identify the origin of the annihilation. Better identification leads to a quantifiable improvement in image quality.

See more, do more

The more you see, the more you can do. The exceptional image quality of Astonish TF compared to non-TOF technology allows for improved lesion detectability and localization.

Full fidelity in seconds

Astonish TF is the only TOF technology to offer highly accurate list mode capabilities to reconstruct an image with speeds as fast as 30 seconds per bed. List mode is a scanning mode that records each event and its timing sequentially to improve image accuracy and resolution. List mode reconstruction enhances precision because it uses each data point for reconstruction, rather than relying on averages.

“The combination of advanced TOF technology with a newer PET/CT system has contributed to significant improvements in image quality which helps us see small lesions in lymph nodes of overweight patients that may have been overlooked on non-TOF systems. We believe Astonish TF is the next evolution in TOF PET/CT imaging and we are excited to see how it can help us in our daily practice.”

*Professor Wolfgang Weber
Nuclear Medicine Department
University Clinic Freiburg, Germany*

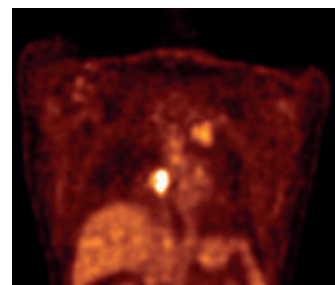
Leading the way

A recent NIH study,¹ using the Philips GEMINI TF PET/CT system, evaluated 100 patients with various body types and found that TOF PET scans improved the signal-to-noise ratio for both liver and lung images and resulted in improvement in lesion detection.

Whole body PET

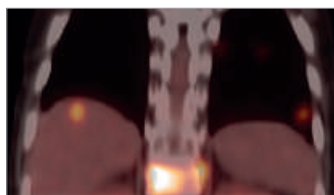


Astonish TF

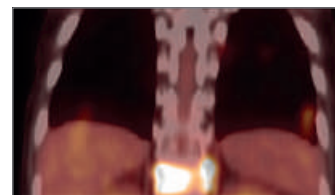


Non-TOF

Astonish TF 4D TOF

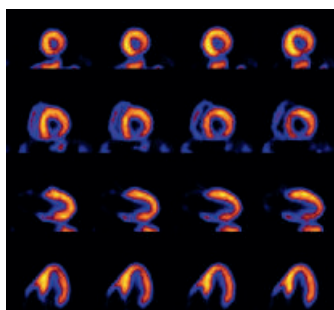


Gated

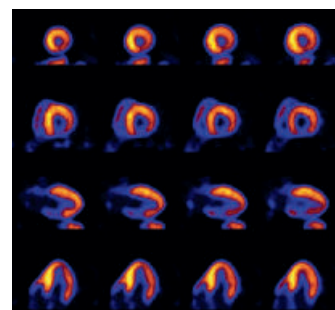


Ungated

Cardiac TOF



Astonish TF

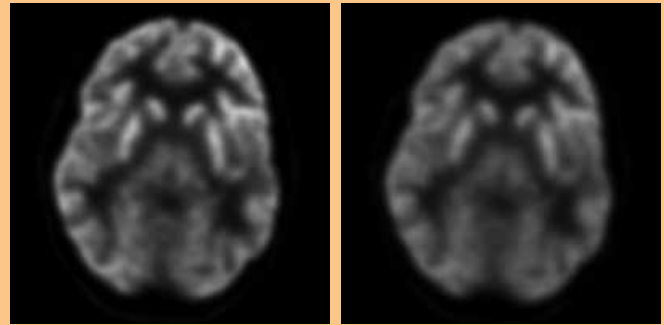


Non-TOF

¹El Fakhri, et al. Improvement in Lesion Detection with Whole-Body Oncologic Time-of-Flight PET. J Nucl Med. 2011; 52:347-353.

Less than 2 mm spatial resolution

On Philips premium PET/CT systems, Astonish TF now improves performance with iterative 2 mm reconstruction techniques utilizing full list mode capabilities and point-spread function based resolution recovery, allowing for fast scans and exceptional image quality that combine to provide greater accuracy in quantitative assessment. With clinical and research protocols, Astonish TF can improve spatial resolution to as low as 2 mm across the entire field of view. This gain in spatial performance can help to provide greater clinical confidence when drawing Regions of Interest.

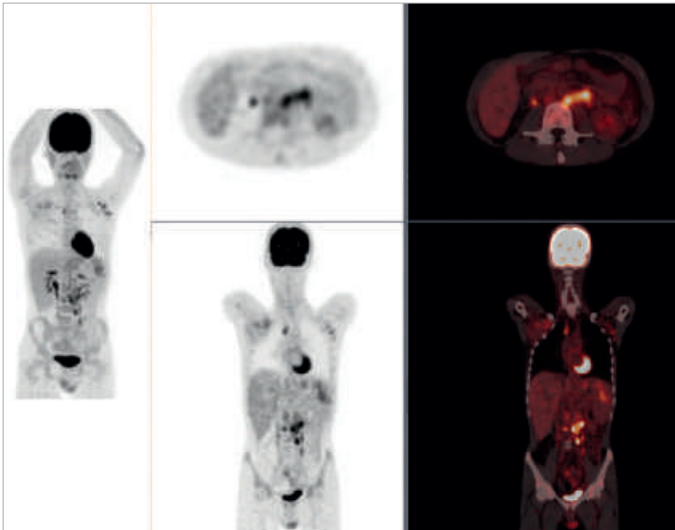


With PSF

Without PSF

Low dose

Astonish TF provides exceptional image quality with up to 5 times higher sensitivity than non-TOF scanners. The sensitivity gain achieved through Astonish TF allows for fewer counts required to measure PET activity. This may help you reduce radiopharmaceutical dosing in some or all of your studies.



5 mCi on 62 kg patient

Exclusive features

- Full list mode TOF reconstruction
- Fully 3D line of response
- 4D TOF respiratory gating includes CT and TOF PET*
- 2x lesion-to-background contrast
- Low dose imaging
- Ultra-fast[†] reconstruction
- 2 mm voxel whole body PET[†]
- High resolution PET with PSF (2 mm)[†] spatial resolution

One machine, multiple uses

Astonish TF also allows clinicians to use their PET/CT system for multiple purposes, including routine oncology, routine diagnostic CT, and incorporating PET into radiation therapy planning.

Perform cardiac imaging, including perfusion studies, as well as conduct neurological studies to image for Alzheimer's Disease and dementia. The advanced imaging capabilities of Astonish TF allows evaluation with a variety of radioisotopes.

Time-of-Flight within your reach

Philips offers Astonish TF standard on many of its new systems, including TruFlight Select, a system that provides premium performance for sites with significant cost constraints.

*Standard on GEMINI TF Big Bore.

[†] Available on selected systems.

Please visit www.philips.com/AstonishTF



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